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Present and Future Trends in the Pulping of Southern Woods

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THE development of the pulp and paper industry in the South during the past decade has been exceedingly rapid. This fact becomes particularly evident when we review the establishment of pulp mills in southern states since 1921. According to Lockwood's Directory of the Paper and Allied Trades for that year, 26 establishments in 9 southern states were capable of producing 382,500 tons of pulp annually. In the 1929 edition of the same directory 36 establishments having a capacity of 1,000,000 tons per annum are listed; these outputs are based on an operating year of 300 days. In addition to the existing plants there are extensions to several mills either under construction or definitely planned; the trade organs frequently announce acquisition of sites for new pulping projects that will utilize southern species of wood. Apparently the South is just entering upon the development of a pulping industry that will make past projects there seem more or less insignificant.

To the informed observer this development is not surprising. The only thing strange about it is that it has been so long in coming. It is merely the working out of economic law, the elimination of an inertia that frequently has slowed up seemingly logical development. Perhaps the chief factor in the delay has been a lack of the technical knowledge needed to make the best use of the pulping resources that the South has in such abundance.

The basic material in pulping production is wood. Although we admit that paper pulp can be produced from any fibrous raw material, no source of cellulose that can compete with wood, either from the standpoint of suitability for most types of pulp or of cost per unit weight, has yet appeared. While it is true that certain of the so-called "pulpwoods" are becoming scarce and high priced because of the prodigal way in which they have been consumed, it is also true that these species are few in number and that behind them there is a tremendous reservoir of other woods, less favored for the time being, which at present are not utilized extensively for pulp but just the same are compact sources of cellulose needing merely proper technical handling to give them pulping value. As examples, may be cited the second-growth hardwoods coming in so abundantly on the cut-over lands of New England and the Lake States; the thinnings from the wood-lots in the Central States and the Mississippi Valley; the tremendous reserves of lodgepole pine, white fir, Douglas fir, redwood, and so forth in the Inter-mountain States and on the West Coast; and, more to the point, as far as present interest is concerned, the pine and gums of the South.

Factors Favoring Growth

The remarkable growth of the southern pulping industry has undoubtedly been due to the availability of an abundant supply of cheap wood, coupled with another favorable factor, the proximity to markets for the pulp. Disregarding the mechanical pulping process, where cheap power is of paramount importance, the chemical processes of pulping cost approximately the same whether they are used in Maine, Louisiana, or California. That is to say, the plant investment and its attendant interest charges, the cost of labor and chemicals and steam, and the efficiency of management will come to about the same total regardless of location. There are glaring exceptions here and there but the assumption seems

[1] Maintained at Madison, Wisconsin, in co-operation with the University of Wisconsin.

justified as a general proposition. If the assumption is granted, then any advantage that an industry in a particular locality may have over the same industry in any other locality will be in the cost of the raw material, wood, or the freight haul to market, or both. What is the situation in regard to wood and to freight rates?

The first part of the question can best be answered by consulting the cost figures for wood compiled by the Woodlands Section of the American Paper and Pulp Association, The U. S. Forest Service, and other agencies. Recently issued figures (1929) show the average pulpwood cost (rough wood) as follows:

New England	$16.80	per cord
New York	$18.04	" "
Lake States	$12.43	" "
Southern States	$ 7.56	" "
West Coast States	$ 8.96	" "
Average for United States	$12.76	" "

For two Southern states, prominent in the recent pulping developments, an average cost of $5.47 per cord is given in the complete data. This cost is included in the tabulated value for the Southern States. Taken by itself, however, it shows an even more favorable situation in some parts of the South as regards wood cost than that indicated by the average figure. The West Coast figure also requires amplification.

Kraft mills using Douglas fir logging waste obtain their wood at very low cost—perhaps as little as $2.00 per ton of pulp. Definite figures on this cost, however, are not available at the moment.

Assuming that each ton of kraft pulp will require about two cords of wood, the advantage enjoyed by the southern pulpwoods over all of the sections listed, excepting the Far West, is obvious.

The matter of hauling costs is not so clear cut. At present the rate on ocean bottoms through the Panama Canal permits the western tidewater mills to ship to the Atlantic seaboard for $6.00 per ton. The rail rate into the Chicago area is near $13.00 per ton from the Far West. In reaching these two great markets, southern mills with tidewater shipping facilities have a slight advantage to the eastern seaboard, and into the Chicago area their advantage is probably somewhat greater. In the Chicago market they must compete with mills in Wisconsin, Michigan, Minnesota, and Canada, with much lower rail freight rates, but using wood of much higher cost.

Assuming, therefore, a certain advantage for the South in freight rates and for the West in pulpwood price, particularly where Douglas fir logging waste is concerned, the South and West appear to stand on about an equal footing, while both areas hold certain advantages over other sections of the country because of their favorable wood situation.

The invariable experience in other localities has been that as the industry is built up, the supply of pulpwood diminishes, and then the cost of wood increases and over-all production costs tend to rise. The South will probably experience a similar reaction. There are circumstances in this instance, however, which indicate that the occurrence will be less marked than it has been in other places. For example, the estimated stand of timber in the southern states is in excess of 2,000,000,000 cords or about 30 per cent of the total stand in the United States. What is more important, the South is capable of producing new stands of wood with great rapidity; 20 years is sufficient to produce trees of pulpwood size. In 1924 the Southern Experiment Station of the U. S. Forest Service estimated that one acre of fully stocked land would yield 38½ cords of shortleaf pine per acre in 20 years or an average of nearly 2 cords per acre per year. The southern forest, furthermore, requires no heroic measures for encouragement. It is a common statement in the South that "if you keep out the fire and the hogs, your forest will grow up in spite of you." The point to all this is that the South now has both an ample supply of pulpwood and the conditions favorable to maintaining this supply perpetually, and hence is without apparent reason for any sharp advances in the price of pulpwood.

As stated, the principal pulp product of the South at present is sulphate or kraft pulp. This commodity finds wide use in brown wrapping papers, paper bags, container boards, and similar products. With the exception of a mill or two producing bleached book papers from the pines, the Celotex and Masonite insulation and pressed-wood-board development utilizing bagasee and pine saw-mill waste, respectively, and several recently built "semi-chemical" pulping plants, all of the establishments in the South make this brown kraft pulp. The utilization of kraft for cement bags and similar containers has given this industry considerable impetus. The South can truthfully be said to dominate the kraft pulp field. The lower cost of wood there permits lower production costs and enables southern kraft to continually enter the market at a price below that of competing pulps. This advantage is somewhat offset by the fact that papers made from the southern yellow pine species have a coarseness of texture, or "wildness," not so evident in pulps made from northern woods and consequently a certain amount of discrimination has followed. In trying to combat this "wildness" tendency, the southern manufacturers have frequently "overcooked" their product, with a resulting loss in strength and additional unfavorable comparison with pulps from other sources. In a few mills, however, the difficulty has been met successfully, the results showing that by proper cooking control a kraft pulp can be made from southern yellow pines quite as strong and as satisfactory in texture as kraft from other species or other localities.

Present Pulping Trends

The present trend in the South, then, is a considerable enlargement of the kraft pulping industry. This situation is "viewed with alarm" in certain quarters, a few individuals pointing out that over-

Fig. 1—A Louisiana stand of loblolly pine seven years old

production is facing the kraft industry. If the present foreign importations of kraft continue, this contention will undoubtedly be correct; any additional American tonnage would then upset the market materially. However, when it is considered that the United States imports over twelve hundred tons of kraft pulp daily, the magnitude of possible local development without a cutting in on domestic production puts the matter in a little different light. With the cheap wood the South enjoys and with the proper attention to technical improvement necessary to produce pulps equal or superior to imported products, the kraft market should be won for domestic producers with plenty of business to go around.

The competitive flavor of the situation and the concentration of the southern pulp industry on what is practically a single product, however, is a somewhat unhealthy condition. In order to stabilize itself, the southern industry needs to diversify its products. As long as kraft pulp is the only commodity all the eggs are in one basket. A weak kraft market bothers the entire southern pulp group. If possible there should be a branching out, a development of lines other than brown pulp products. To be sure, there is some evidence of this but not to the extent that technical developments appear to warrant.

It has been almost ten years since the Forest Products Laboratory announced[2] a method for the production of bleached book and magazine papers from southern yellow pines and gums. Common kraft pulp is very difficult to bleach and the usual bleached product is of low strength. The new method involves the use of the sulphate or kraft process with certain modifications, but the principal point of difference is the use of a 2-stage system of bleaching. This bleaching system at the time was looked upon by the industry with some amusement as a more or less impractical or "laboratory" idea. The findings of the research referred to were practiced in not more than one or two mills and consequently only a comparatively small amount of book paper is made from southern woods at the present time. Progress in the 2-stage bleaching practice, however, has gone on apace. The actuality of savings by this procedure have resulted in the installation of 2-stage systems in many pulp mills operating on spruce and hemlock and the practicability of the idea is established. It is now available for more intensive application to the bleaching of southern woods, and the low-cost raw material available to the southern mills should bring them strongly into the book-paper field.

Recent Research Developments

The U. S. Forest Service has not lost sight of the southern situation and has continued to put considerable emphasis on the research and technical

Fig. 2—The remarkable growth of southern yellow pine is shown by this cross section of a seven-year-old loblolly "sapling"

development of pulping southern species. About three years ago a special appropriation was granted to the Forest Products Laboratory by Congress, and

[2] Book Paper from Southern Pines and Gums. By Sidney D. Wells. The Southern Lumberman, December 25, 1920.

has been continued since that time, to study specifically the pulping of southern woods and particularly to develop, if possible, a strong white pulp from southern yellow pine. Where the previous investigation[2] had shown only the possibility of bleached book and magazine papers—products in which strength is a matter of secondary importance—the current work had the objective of light color combined with strength qualities. This combination has heretofore been lacking in bleached southern yellow pine papers. Such a pulp is especially desirable since to a certain extent it would be a substitute for spruce sulphite, like that used in newsprint, wrapping papers and bond. The investigational work done in connection with this special project has yielded some very interesting results. Confirming previous work, the southern yellow pines were found to be reduced to pulp best by the sulphate process; this is an alkaline process but is less alkaline than the so-called soda process that is normally employed in pulping hardwoods for book paper. The unsuitability of the sulphite or acid pulping process for the pines was ascertained, as well as the unsatisfactory

Fig. 3—An 18-year-old stand of loblolly pine in Louisiana

grinding qualities when the mechanical process was applied.

In investigating the sulphate process at the Forest Products Laboratory, it was noted that by increasing the ratio of cooking chemical to wood, that is, by using more pounds of chemical per unit weight of wood, but doing this with a greater dilution of cooking chemical than the concentration

Fig. 4—A 20- to 30-year-old stand of longleaf pine in Florida

usually employed, a better yield of pulp was obtained and at the same time a pulp that could be bleached without a serious loss in strength. This last observation is of extreme importance; it is something novel in yellow pine pulps, which usually require a large amount of bleaching agent and because of this excess suffer a marked impairment of strength.

Bleaching Pine Pulps

At the same time the staff of the Forest Products Laboratory studied bleaching methods, with the eventual development of a 2-stage bleaching operation in which either chlorine water or gaseous chlorine was used in the first stage and ordinary bleaching powder (calcium hypochlorite) in the second stage. This method reduced the amount of chlorine necessary to bleach the pulp and at the same time gave a stronger pulp than the customary methods of bleaching had done. The combination of cooking and bleaching accomplished the desired objective, namely, a strong white pulp from southern yellow pine. This method has now been applied to loblolly and to longleaf pines. Later it will be tried with slash, shortleaf, pitch, and various other varieties of the southern yellow pine family. It appears, however, to be generally applicable and to offer something of definite interest to the southern pulp producer.

Concurrently with the study of the pines there have been in progress experiments relating to the pulping of the gums and other southern hardwoods by the sulphite process and by various semi-pulping methods worked out at the Laboratory. Contrary to the views held heretofore, the sulphite process works satisfactorily with the gums, particularly black and tupelo gum, yielding a fairly strong pulp that bleaches easily to a blue-white color. The gums are also readily pulped and bleached by the sulphate process. The combination of bleached pine-gum

sulphate pulp and of bleached gum sulphite pulp in a book paper is worthy of comment. One objection to all alkaline pulps, even when they have been thoroughly bleached, is their tendency toward a cream tint. On the contrary, good sulphite pulps,

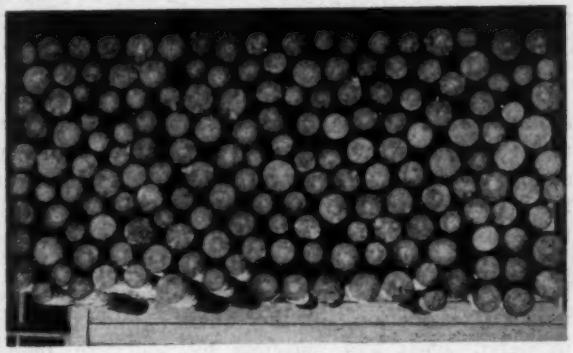


Fig. 5—A racked cord of longleaf pine pulpwood

when bleached, have a blue-white color. Most book papers contain bleached spruce sulphite along with soda pulp, which is usually made from aspen wood. The sulphite in this combination gives a blue-white tint that the trade has come to expect. It seems logical that a book paper may be made from the combination of pine and gum just noted. The long-fibered pine sulphate would take the place of the spruce sulphite; and the gum sulphite, which would replace the soda pulp, would impart the blue-white color so greatly desired.

The Semi-chemical Process

Another development of interest to the South is the working out at the Forest Products Laboratory, followed by its commercial introduction, of a semi-chemical pulping process particularly suited to the reduction of the southern hardwoods. In contrast with the ordinary chemical processes, which employ either strongly acid or strongly alkaline reagents, the chemicals used in the semi-chemical process are practically neutral. The method also differs from standard chemical pulping processes in that the chips are impregnated with the reagents prior to cooking, this being accomplished by the application of either steam or hydraulic pressure. A third distinctive feature is the fact that the wood is merely softened in the cooking treatment and is subsequently reduced to pulp by mechanical action, such as disintegration in a rod mill. This combination of treatments results in a high yield of pulp, the quality of which depends largely upon the type of wood employed. If a dark-colored species is used, the resulting pulp is dark and its use is thereby limited to papers in which color is not important. If, however, some light-colored species such as freshly cut black gum is used, very light-colored papers can be made.

The semi-chemical process has enjoyed a somewhat extensive commercial development in the past five years, because of its special suitability in the pulping of extracted chestnut chips, the by-product of the tanning extract plants. Prior to 1925, these extracted chips were of use only as fuel, but with the advent of the new process they were successfully converted into corrugating paper stock and five semi-chemical pulp mills are now in operation in various southern states manufacturing this commodity. In another mill, black gum is being pulped by the semi-chemical process and is converted into machine-glazed wrapping papers of a light color. By a little more careful selection of wood, this mill could undoubtedly produce from gum a semi-chemical paper suitable for cheap print or tablet use.

The semi-chemical process gives high yields of pulp capable of considerable strength development and offers the possibility of replacing some of the more expensive kraft paper now used in the manufacture of pulp boards. Semi-chemical pulp appears particularly promising for use in admixture with kraft for container liner purposes (the liner is the outside sheet of a multiple-ply container board). In view of the already extensive development of the semi-chemical process in the South and its unquestioned possibilities, one of the trends in southern pulping should be in this direction.

Still another line of investigation undertaken in the Pulp and Paper Section of the Laboratory, which may prove of interest to the South, is the possibility

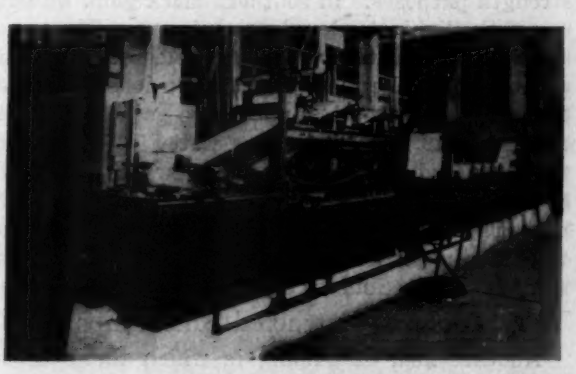


Fig. 6—Experimental paper machine at The U. S. Forest Products Laboratory, Madison, Wisconsin

of producing sulphite pulp from the pines, particularly if the pulping and the lumber industries can be so integrated as to select the wood going to the pulp mill. In an address before the American Paper and Pulp Association of New York in February, 1929, Dr. Charles H. Herty reported an analysis of young slash pine that showed this wood to contain only very small quantities of resin; this substance is usually considered the bar to the reduction of the pines by sulphite or groundwood processes. The growth examined was young, consisting almost entirely of sapwood. Previous pulping studies on the pines, both in this country and in Europe, have shown that the sapwood can easily be pulped by the

sulphite process, whereas the heartwood is very resistant to acid reagents and is in fact not suitable to acid pulping at all. Dr. Herty's inference is that by the elimination of the resins, this disadvantage will be removed. The most interesting point brought out by Dr. Herty, however, is that, in a long-time forestry operation growing slash pine for timber purposes, best results can be secured only by consistent thinning out of young growth. It is easily conceivable that such a thinning operation would be large enough to supply amounts of wood sufficient to maintain a pulp mill. Assuming that the special quality of this young pine wood will permit its being pulped by either the sulphite or the groundwood methods, its lower cost should give it a marked advantage over northern-grown species. Such a forestry development would be an entering wedge for the newsprint industry, perhaps the largest tonnage in the paper field, into the South.

Newsprint from Southern Woods

Recent work at the Forest Products Laboratory in the production of newsprint from hardwoods has resulted in the successful accomplishment of this objective by grinding such hardwoods as aspen, southern black gum, and paper birch, mixing this groundwood with a certain proportion of sulphite pulp from the same hardwood species, and then adding a small amount of long-fibered sulphite for strength purposes. In southern black gum, we have one of the lightest colored woods known. The use of black gum sulphite and groundwood, with a certain proportion of the pine sulphite previously referred to, would also permit the South to gain entrance to the newsprint field. It may be stated in passing that the estimated production cost of newsprint prepared by these methods is very close to that of standard newsprint as made from spruce sulphite and groundwood at the present time, and that such a development is by no means as remote as might be supposed.

Pulping Extracted Pine Chips

Another field of pulping in which there is constant interest and in which the Forest Products Laboratory has functioned to some extent is the pulping of extracted pine chips. These chips are by-products of the naval stores industry and their successful use would combine the two industries, naval stores and pulping, into an integrated unit. Unfortunately the preliminary extraction, as at present practiced, destroys the chemical pulping value of the chips to a rather marked degree. Pulp yields from extracted chips are low. The strength qualities of the sulphite pulps from this source are below those of a first-grade kraft, in spite of all the pulping methods that have been tried. A second-grade pulp is difficult to sell. Efforts to lessen the degradation resulting in the extraction process have been only moderately successful, and no satisfactory balance seems to have been set up anywhere on a commercial scale. Recently, attention has been directed toward utilizing these extracted chips in products such as building and insulation boards, where the factor of strength is not so important. No commercial developments have gone into operation but such a utilization seems logical and practicable and will, no doubt, be realized.

Possibilities of the Future

The possibilities of research are so varied and far reaching that speculation upon future developments and their import to the South might be extended almost indefinitely. Enough has been said, however, to indicate the present status of the pulp industry in the South and the logical trend of its progress. Although a domestic market exists for all southern kraft tonnage and for a considerable increase over present production, if the quality and price of imported kraft are matched by southern manufacturers, the indefinite extension of southern mills into the kraft field alone would still be an unhealthy condition. A diversity of products must be obtained. The production of the finer pulp grades, which bring higher returns, and the big-tonnage fields in papermaking, must be entered. Technical developments point the way to such a diversification and the economic background, especially the raw material situation, seems favorable for this expansion. With a proper realization of the opportunities offered by the South, there seems good reason why this more or less optimistic picture of the future should be realized.

Lubrication and High Temperature

Not long ago a large concern in the Middle West had been experiencing difficulties in moving their oven trucks after they had been in the ovens. Due to the intense heat of the ovens the wheels of the trucks would stick and it was difficult to roll them out.

To eliminate this difficulty, they equipped 500 of their trucks with special fittings which they thought would solve the problem. But they didn't use the correct lubricant. They did not make any change in lubricant. They found that the high temperature in the ovens still caused the oil to carbonize and it was next to impossible to turn the wheels. No improvement was noted. They tried several other greases but the results were all the same.

The problem was finally solved by removing the special fittings and using a high grade enameling conveyor oil which is now applied by means of an ordinary squirt can. There is no more carbonizing or sticking of wheels. They are very well pleased with their "find".

This is only to show, therefore, that there is a difference in lubricants and that lubrication is a very important problem. Many times problems that are thought to be structural and complex, as in the instance above, are problems for the lubrication engineer and are simpler than they seem to be.—Schaphorst.

Engineering Pointers

By W. F. SCHAPHORST, M. E.

Do You Utilize Your Exhaust Heat?

THE waste of exhaust steam goes steadily on in spite of all the writing and talking that has been done about it. Board a train almost anywhere and observe the good heat going to waste as you travel from city to city. It is "pouring out" of almost every factory you look at. No doubt you have said to yourself or to some one else: "Some efficiency engineer should take that factory in hand and make them utilize that steam."

During the summer months there is often a plausible excuse for wasting steam. Steam cannot be bottled up and kept hot until the winter months. At least, it cannot be done economically. You can store ice with comparative ease, but steam is different. So, don't feel badly if you find it necessary to waste a little steam during the summer, but during the winter every bit of heat in every ounce of coal should be utilized, if possible.

Regardless of what you do to save steam, some of the heat in your fuel is bound to escape through the chimney, but that is all that should be allowed to get away without first doing something. No matter how efficient your steam engine or turbine, it will be difficult for you to transform more than 20 per cent of your heat energy into mechanical energy. That is about the limit in present steam power plants. It means that you are getting a little more than one hp. per hour out of each pound of coal, assuming 14,000 B. t. u. as the heat value of the coal. The chances are a hundred to one that you are not doing nearly that well in your plant, disagreeable though this may sound.

Therefore, it is urgent that your exhaust steam be utilized. Exhaust steam contains the major part of the heat of the fuel. Use it for heating the feed water. Use it for heating the building. Use it for heating water, for cooking, for processing, for preheating air, or for anything else that may be useful. If you still have some left, maybe there is a neighbor across the way who would be glad to buy your surplus exhaust if you will tell him the amount of steam you have to sell. Maybe you could afford to pipe it a considerable distance to some one else who needs low pressure steam and who heats boilers of his own just for this purpose alone. Maybe these things are true. Maybe they are not. Have you ever looked around?

On the other hand, maybe conditions are reversed. Maybe "you" need that surplus exhaust steam that is being wasted by your neighbor. Maybe you could buy it from him at a very low price. Maybe, by so doing, you could dispense with the use of boilers altogether. Have you ever looked into this side of it?

It is hoped that these few thoughts will lead to the saving of considerable fuel, especially in the winter time. Make up your mind that you are going to get through as economically as possible.

The Value of Finely Pulverized Coal

EVERY paper mill engineer certainly knows that tremendous power is inherent in combustible dust. Many an industrial plant has been destroyed by dust explosions. Many a coal mine disaster has been caused by the explosion of coal dust. In fact the Department of Agriculture of the United States has recently been exhibiting an internal combustion engine run entirely on dust, the force of the explosions being sufficient to cause the engine to deliver power.

In order to obtain quick or almost instantaneous combustion of any combustible material, it is necessary to increase the surface of the material being burned. Thus if you take a piece of wood and cut it into shavings, you know from experience that the shavings will be consumed by fire much more quickly than the original piece of wood would be consumed. Make the shavings as fine as excelsior and complete combustion will occur in a surprisingly short time. The finer the excelsior the greater the area of exposed wood and therefore the quicker the combustion.

Let us for example take a lump of coal which is an exact one-inch cube. It has six faces and each face is one inch by one inch giving us a total surface of six square inches.

Now let us cut up that inch cube into a great many tiny cubes so small that each cube will be only 1/200ths of an inch on each edge. In other words the coal will be fine enough to pass through a so-called "120-mesh sieve". It is easy to figure that there will be 8,000,000 tiny cubes, that each cube will have a surface area of $\frac{6}{40{,}000}$ of a square inch, and that the total area of the cubic inch block will be increased from six square inches to 1200 square inches. In other words its surface will be 200 times as great.

But coal dust that is really fine is finer than 8,000,000 cubes per cubic inch. The finest testing sieve in the world has 400 meshes per inch, or 160,000 square

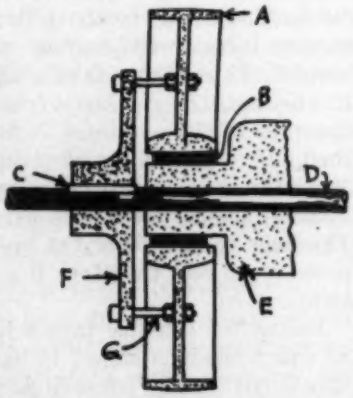
openings per square inch. The wires are one thousandth of an inch in diameter. To pass through this sieve the coal particles must be smaller than 1/666 inch on each edge and there would be a total of 295,000,000 such cubes per cubic inch of coal. The surface would be increased to 3996 square inches. Coal of this extreme fineness burns so quickly that most people would call its combustion an "explosion", much like the burning of gas.

Even fuel oil must be pulverized or "atomized", as they call it, before it will burn properly under a boiler. That is why the combustion of pulverized coal and atomized oil are so much the same. It is an acknowledged fact that the more thorough the atomization of oil the better the combustion, because the more finely divided the oil is, the closer its approach to the ideal gaseous state.

Eliminating Shaft Deflection

AN excellent way in which every bit of belt pull can be eliminated from shaft bearings is shown in the sketch herewith. Shaft deflection due to belt pull is therefore eliminated also. This method requires less space, and instead of two additional bearings as are sometimes used, there is only one—a roller bearing which consumes less power than ordinary plain bearings.

The sketch shows how, by turning down the housing (E) of the motor if possible, or by casting such a housing and attaching to the motor and then mounting the pulley on this housing, and equipping with roller bearings (B) between the pulley and hub, all the belt pull falls directly upon the shaft housing. The flexible coupling (F) shown at the left is keyed to the shaft (D) and is connected to the pulley (A) by means of bolts (G), or by other methods familiar to all who use flexible couplings.



By applying this method there can be no binding or deflection in the shaft, and friction is reduced to the minimum. No more space is used here than when the pulley is placed as it often is, on the end of the shaft, thereby giving the undesired overhang. With this method, the force on the shaft is purely a twisting or torsional action—an ideal condition. The only bending is that caused by the weight of the shaft itself plus whatever the shaft supports.

If desired, ball bearings may be used in place of the roller bearings shown. Or, if roller or ball bearings are considered too expensive, simply use a plain bearing instead of the anti-friction type. In any event, this arrangement is more satisfactory than where we have an overhanging pulley. Its first cost may be greater, but in many instances first cost is of much less importance than space and power saving.

Understandable Literature?

WHILE at an exposition last year, I was interested in a certain exhibit. The subject of the exhibit was not directly a part of my work, but indirectly, as I have had considerable to do with it in years gone by. In fact, at one time I thought I was a shark at it. I should be better acquainted with it at the present time than I am.

The exhibit was not entirely clear to me, but not wishing to display my utter ignorance I did not ask many questions. I asked a few and then took two of the folders along with me which were handed to me. Nearly everything that the salesman had told me was "over my head".

Since that time I have had an opportunity to read these folders. Unfortunately, though, I still do not understand the machines as well as I should. The folders sound as though they were written by a man who knows all about the machines and all about papermaking, and he feels that we readers should know more about the subject than we really do.

Many catalogues, bulletins, folders, and letters are like that. They are "very well written", and are understandable by experts, but all of us are not experts in the making of paper or in hundreds of other specialties. Writers on technical subjects should learn that they must get down to earth if they really want to teach. Take for instance, Einstein's recent six pages about which we have been reading in the papers. I doubt whether a single person in the entire United States fully comprehends Einstein's reasoning. I know I don't. Eventually somebody will understand it and will rewrite it in an understandable way. Then we will understand. There are very few things that cannot be made clear, in writing.

I wrote a letter to the manufacturers of the above machines asking for a further explanation, but to date have received no reply. They probably think that I am too "dumb" to bother with—that I am so ignorant on the subject that I could not possibly be influential in the purchase of one of their machines.

Surprising as it may seem, mechanical engineers are often asked by clients to make investigations into subjects regarding which the engineer himself knows absolutely nothing. That has happened to me time and again. There is so much to be known about the pulp and paper business that no one man can possibly know it all. As stated so aptly by Thomas A. Edison, "We do not know one millionth of one per cent of anything". It surely is no disgrace to say, "I do not know".

Cost Accounting in the Paper Industry

Part XIII—The Standard Cost System

By D. A. WILCOX

Queries and Answers

In order to encourage discussion on the subject of cost accounting in the paper industry, the author of this series of articles is prepared to answer to the best of his ability any queries on cost accounting that may be directed to him.

CONTINUING with the problem of the sulphite mill we shall now consider how this would be handled by a standard or predetermined cost system. The principle involved is just the opposite from that of the actual cost system. In our study of the last-named, we attempted to find out the cost of the pulp at the particular moment and to lower the cost by studying the various elements which have caused the cost to advance. In the standard system we settle on a cost which we believe to be correct and then bend all efforts to make it for that cost.

Actual Costs Are Post-mortems

The actual system involves a series of post-mortems, whereas the standard system projects into the future, and the facts developed are far more immediate and up to the minute. Involving as it does fewer steps, it is less work in some respects and the information it gives is certainly truer, more direct and prompt.

There is no question but that a standard system involves more speculation than the actual and is certainly not so easy to grasp by the uninitiated. Once, however, the general principles have been thoroughly understood it is simplicity itself and seems self-evident. Therein lies one great difficulty with many cost men—the idea seems so simple to them that they do not appreciate the bridge over which they, themselves, had to pass to their present knowledge; their impatience with others for not seeing it eye to eye with them raises antagonisms on both sides which only widens the breach.

Setting Up the Standard System

So let's get to the subject. How are we going to set up this "super-system"? What do we get out of it and how? As a very annoying friend of ours has the habit of saying after you have told him a particularly good story, "Well, what of it?"

The first step, as ever, is to survey the mill and set up the various centers. Right here we will begin to depart from established customs and suggest innovations. In the conventional system we would divide the mill up somewhat as follows:

(1) Pond; (2) Wood room; (3) Digester room; (4) Bleachers; (5) Machine room; (6) Shipping; (7) Power plant; (8) Repair dept.; (9) Store room; (10) Mill office; (11) General manufacturing burden.

Centers 7 through 11 would be redistributed to the other centers on various bases. Power on the basis of power used; repair department on the basis of man-hours spent in each center by the repair men; general manufacturing burden on some arbitrary basis, such as average man-hours in the operating centers, and so forth.

Each center would have its capital assets appraised, and fixed charges such as depreciation, taxes, etc., apportioned; each would have a proper proportion of the redistributed charges and all its own direct expenses combined to build up a total charge for operating the center.

This is necessary when more than one product is made and where some go through certain operations which the rest do not, or where certain centers can be shut down without affecting the rest. As this is not the case here and as we wish to suggest the simplest possible system for any particular case we are going to suggest an entirely different set-up. So far as we know, this is not at present in actual operation and with this warning we shall proceed.

Proposed Set-Up

Instead of the conventional, we suggest the following:

1—Pond.
2—Wood room.
3—Digesters, including acid room, digesters, blow pits, screen room.
4—Bleaching.
5—Machine room.
6—Shipping, including storage of finished pulp.
7—Steam plant, including main boilers, wood room boilers, etc.
8—Electric power.
9—General expense, including yard, mill office repairs and stores, general mill, general salaries.
10—Fixed charges, including taxes, general ininsurance; all except that connected with the boiler plant; light and heat, repairs to buildings—reserve account; special reserves.

None of two centers last named will be redistributed at all but will be applied directly to the pulp in the form of a standard rate per ton when it goes over the dryer.

This set-up saves considerable clerical work and gives a better control over the general expenses as

there is no chance of their being lost sight of. As they eventually do get into the cost of the pulp, it is as effective and equitable as any other method.

There is one exception to this, however, and that is the steam plant. In that case it is handled in the conventional manner and fixed charges, etc., fully worked out and applied. The reason for this is that the steam plant is really an independent center and a most important one at that. As there has been much research about steam cost which is available in the various publications, it is thought advisable to set this center entirely on its own feet so that steam costs may be fully assembled and compared with others at the other mills.

No Repair Center

We appreciate that some of our accounting friends may raise the question as to the necessity for a repair center to give all other centers a fair charge for repairs to be compared with repair cost as done by outside concerns, to the end that if work is done by the repair force for capital expenditures, a fair amount of the repair center expense may go with it. Our reply would be, "What of it?" Rather than go to the trouble of setting up such a center and all the attendant bother of operating it, we would estimate such charges to capital expenses as the occasions arise (and this would not be difficult nor far out). As to comparing repair costs done with the mill force against the cost of having them done outside, how many times is this ever done?

Following the System Through

Let's make some sulphite and see just what we do about getting the costs. First the wood comes in to the yard. We charge wood inventories with the actual costs, freight, demurrage and labor in piling, and so forth. This gives the actual cost of the wood in the piles. From all available data we estimate each year what this is going to be, the average cost for the following year, and set this as a price at which to charge the wood to the wood room. This is our first standard price.

The Cost of Chips

Our cord of wood now moves out of the wood yard and into the wood room through the pond. In the wood room it is converted into chips.

We credit the wood inventories with the wood used at the actual cost per cord and debit an account called "Wood Variance Account." Then we credit this account and charge "Chips in Process" with the same number of cords, but at the standard cost. Any difference left in the "Wood Variance Account" at the end of the month shows the gain or loss due to the difference between the actual cost of the wood and the standard cost. It is charged off directly to profit and loss or built up into a variance reserve for the year.

Price Variance

Here we have our first variance—a price variance. It tells us directly how far off the actual cost of the wood we are using is, from the standard which we set to be the cost.

For the moment we shall postpone the detailed discussion of the method of setting standards of conversion, rates, etc., for the various centers and assume this to have been done. We shall later return and take all this up, together with other dry-as-dust matters, but for the sake of continuity we shall skip over these details for the present.

Our wood is now chips. We have charged it to "Chips in Process" and we now add to this cost the cost of the pond and the wood room which is to be at flat rates per cord. Thus our chips in process stand us at the scheduled cost for wood and the standard rates per cord for conversion.

As regards the two centers, the pond and the wood room, we pick up the actual charges and then credit the centers with the number of cords treated at the set rates per cord. The difference, if any, is the "Unearned Burden and Variance."

Unearned Burden and Variance

Just a word as to the meaning of this phrase. It is obvious that if an operating center does not run full the cost of the product that is made will be greater than if it did run full. By collecting in one lump sum the amounts by which the costs were affected by this, we can examine it and see just what it amounts to, independently of all other causes that might have increased or lowered the costs. If we do not collect it thus but merely allow the costs to increase, we are apt to lose sight of it and we miss a chance to gain some very helpful information. This amount, by which costs have been increased owing to loss of productive capacity, is our "Unearned Burden" and the amount by which costs have been increased due to excess expenses is the "Burden Variance."

While it is also true that these variances are also brought about by other considerations and also have other meanings, this is essentially the fact. In practice, after having been considered separately for purpose of analysis they are then combined into the one account, "Unearned Burden and Variance," and they then represent the difference between the actual expenses of operating the center and the amount of conversion that has been charged into the product.

The Digester Room

Now our chips move on to the digesters. There they meet acid, and steam. They become unbleached pulp, are blown into the blowpits, are washed and screened and then delivered to the bleachers. A lot happens here.

Firstly, we have to consider the manner of charging the chips to the digesters. Heretofore we have

been considering cords of wood or chips, or some other unit of volume. Now, however, we may weigh our chips and consider them henceforth in terms of units of weight. If we have no weightometers this problem will not arise but we must consider how to handle it if it does. In the former case we shall have another variance which we shall not have in the latter.

If we charge our chips to the digesters as cords, we credit "Chips in Process" and debit "Pulp in Process" with the actual cords cooked at the standard cost per cord. There will be no variance here because the standard cost per cord will be the sum of the standard price for wood and the standard costs for conversion into chips, but if we have weightometers we must convert cords into pounds and this will not be a constant figure in actual practice.

Yield Variance

Thus we estimate the yield in pounds of a cord of wood. We then credit "Chips in Process" and debit "Pulp in Process" with the number of pounds used at the standard cost per pound. If the yield of pounds per cord is correct, the debits to "Chips in Process" on the basis of cords and the credits on the basis of pounds will exactly equal each other and we shall have no variance, but if they do not agree a variance will result. This variance tells us directly how much we are out by receiving a greater or smaller yield per cord than we anticipated. It is termed a "Yield Variance." Of course there will always be a small inventory of chips in process; so we can not charge off to the variance account the total balance left in the chips in process account at the end of the month but must leave there an amount which truly represents the value of the chips as shown by the physical inventory priced at the standard cost per cord or pound, whichever way is the method of taking the inventory. The difference between the total debits to the account plus the inventory at the beginning of the month, less the credits and the value of the inventory at the end of the month, is the variance.

Usage Variances—Sulphur and Lime

Our chips meet acid in the digesters. Acid is composed of sulphur and lime or limestone. We may use more or less of either than we should and that is essential information; how do we get it?

Take the sulphur for example. Our inventory of sulphur (and all other raw materials) is at the actual cost per pound. If necessary we can develop a price variance here as we did with the wood, but the prices of chemicals are usually so stable that this may be dispensed with. But the usage is a different story.

So we set up a "Sulphur Variance Account" (and similar ones for lime and other chemicals) and we charge into it the actual pounds of sulphur used at the actual or standard cost, but we credit this account and debit "Pulp in Process" only with the standard usage per ton of pulp at the same price as before. What is left in the account then represents the difference between the actual and the standard usages of the sulphur for the amounts of pulp made that month. This tells us a direct story and gives us another immediate control.

These are our first "Usage Variances" and they will tell us one thing—the amount by which we failed to meet our standard usages of materials. It tells us this without any possibility of confusion with other factors and it is specific and concrete.

Conversion Variance

How about the conversion? We have a wrinkle there too. We charge the center with the actual expenses for labor, supplies, and so forth, and credit it with the number of digesters blown at a set rate per digester. Again we have our unearned burden and variance, but we do not charge the earned burden directly to the pulp. Instead we charge it to a "Conversion Variance Account" and then we credit this account and debit "Pulp in Process" with the number of tons of pulp produced at a standard rate per ton for conversion. If we get the standard yield out of each digester, this credit will exactly equal the debit to the account on the basis of the number of digesters blown. If, however, the actual yield is different from the standard we shall have a balance left in the account and this variance will represent the value of the excess or loss in yield.

This is what we term a conversion variance and is useful to show the efficiency of the conversion. It is a useful variance here as it gives a line on the yields per digester and tells its story, but the chief value of conversion variances will appear later on in the paper mill where the degree of efficiency is more within the control of the department head.

Steam

Each conversion center in this mill is to be charged with the actual conversion expenses, but only with the directly controllable expenses, as fixed charges and the like are to be collected in one separate center. These controllable expenses are similar to the ones shown in the preceding article of the series under the actual cost system but in addition we are going to charge the center with the steam and power actually used. These are also controllable to a large degree by the operating head and are matters of great importance to control. There was no charge for these items in the actual system, which is one defect of it.

If steam meters are available, and they should be, the system becomes of real value. In this case we charge all the steam used according to the meters to a "Steam Variance Account" at a fixed rate per ton, 1000 lb. or hp. (whichever unit is used) and then credit this account and charge the steam-using centers on the basis of standard usages of steam per ton of pulp. Any balance remaining in the account

will therefore represent the excess use of steam, or the saving, and this can readily be analyzed to show just which centers are responsible for the variance, and hence show up the condition of the steam usages in each center. Where there are no meters, this system loses most of its value because there is no definite method of showing exactly how much steam was actually used in each center. However, even here "all is not lost save honor," because we can debit the steam variance account with the total steam generated (there must be some method of figuring that!) and then crediting the account and debiting the centers with the amounts, based on standard usages per ton at each point, allowing for losses in transmission, etc. The variance here also represents excess usages but, of course, we are unable to analyze it; it does, however, put us on our guard that something is wrong.

Electricity can be handled in exactly the same manner.

Bleaching

Our pulp is now digested, blown, washed and screened. It must be bleached. This, of course, is done in the bleachers where the conversion of the bleaching room is added to the "Pulp in Process" at a fixed rate per ton, together with the standard quantities of bleach, liquid chlorine and lime, or whatever method of bleaching is used. These materials are handled in exactly the same manner as the sulphur and similar variances developed.

Machine Room

It is then dried (or run over wet machines). The machine conversion is added to the "Pulp in Process" at a set rate per ton. If desirable to get a line on the productive efficiency of the dryer, the burden could be set at a rate per hour and debited to a "Machine Conversion Variance" which in turn would be credited with the rate per ton, leaving the conversion variance to represent the efficiency of the machine but this hardly seems necessary.

Fixed and General Charges

At this point, namely after the dryer, we add the fixed charges and the general burden. These are to be at fixed rates per ton of pulp. We credit the general and fixed charges, centers 9 and 10 and debit "Pulp in Process" with the number of tons dried at the rates per ton. Any balances left in the centers are "Unearned Burden and Variance" and represent the unabsorbed fixed and general charges.

Finished Pulp

We now credit "Pulp in Process," and debit "Finished Pulp" with the tons of pulp dried at the standard cost per ton of pulp. As this standard is the sum of all the previous standards, there should be no variance and any balance left should truly represent the value of pulp in process. Of course, this should be checked frequently by physical inventories which are priced at the accumulated costs to the points where taken. As the charges to "Pulp in Process" are all based on the weights of dried pulp, figured backwards to allow for inventories, no question of shrinkage can enter into it.

There remains but one more step in the manufacturing process, that of shipping. As pulp is shipped, "Finished Pulp" is credited and "Cost of Sales" is debited together with the shipping burden at a set rate per ton. This shipping burden represents the burden developed to cover the shipping and storing center and is credited to it as with all others. The cost of sales then represents the total mill cost of the pulp at standard, which, in turn, should represent a fair normal cost for manufacturing the pulp.

What Have We?

We have now followed the course of the pulp through the mill and what do we have at the end?

A cost which represents the normal cost to manufacture pulp, regardless of actual current conditions. To this can be added the variances and we get the current actual cost, if desired.

Unearned burden of each center which tells us the effect on the costs of unused capacity.

Burden variances of each center which show us where there have been excess expenses.

Price variances of the materials which tell us how far out we were on the cost of each individual material.

Material variances which tell us how far out we were on our usages.

Yield variance to show us the amount gained or lost by yield.

Conversion variances which tell us how efficient our conversion was.

A steam variance which tells us how efficiently we used steam.

Thus we watch each step in the process. We neatly pigeonhole each factor and take each one out individually and examine it independently of the rest. We can, if we desire, do this each day as we go along and not have to wait till a high cost tells us we should go back and hunt for trouble. It is for each individual mill management to decide for themselves whether all this is sufficiently valuable to them to undertake or whether, through constant contact with conditions, they get sufficient information through the other system to operate just as efficiently.

Succeeding articles will deal with the details of this system, showing the necessary accounts and the manner of using them; the charges to the centers and other particulars.

America ought to double and treble her investment in research. Here is an item in the budget where to be penny wise is pound foolish.—John Hays Hammond.

Application of Electric Motors to the Pulp and Paper Industry

Part III—Paper Mill Equipment Motors, Fresh Water Supply and Power Plant Requirements

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This is the last of a series of articles, the purpose of which is to show as nearly as possible the power requirements of the various branches and departments of the pulp and paper industry, and the types of motors best adapted for each. In an industry which is expanding at the rate the pulp and paper industry is, it is not an easy matter to compile a set of data which will cover all instances, but for the greater number of applications, the figures given will be found to closely approximate those required for present day practice, and when compared with those of a decade ago, will show a vast difference.
—Author.

THE paper mill equipment includes all departments necessary for the preparation of the stock before passing over the paper machine, and the handling of the finished product, as well as the making of the paper. Among the various departments are the clay, size and alum preparation, and the beater room.

Requirements for Clay, Size, and Alum Preparation

The power requirements in this department depend on the grade of paper manufactured; bonds and book paper requiring more clay and size than other grades. Where all grades from newsprint to bond are manufactured, the power requirements in connected load will approximate .8 hp. per ton of paper. Practically half of this power is required in crushing and conveying the clay, the balance being required in agitating, screening and pumping the clay, and in pumping the alum.

Standard squirrel cage induction motors may be used on all applications; those on the clay screens, crusher and clay conveyors should be equipped with ball bearings. The pumps and screens should be direct drive, the crusher chain drive, the agitators and screw conveyors driven through reduction gears direct connected to the motors, and the balance of the applications belt driven.

Beater Room Equipment Requirements

The power required for beaters varies as to the length of fiber, and the distance between the roll and bedplate. A 1,700-pound beater with a roll face of 5 feet requires a 150 hp. motor. The power will vary anywhere from 125 to 175 hp., long fiber sulphite stock requiring the maximum, and short fiber or groundwood stock the minimum. The friction load alone is approximately 80 hp. In estimating the requirements for a given mill, a safe figure is 2.5 hp. per inch of roll width or face.

The drive is usually short centered, and for this reason a chain drive is probably the best type, although a belt drive equipped with a tightener (Lenix Drive), or a Texrope drive will give satisfactory results. The motor should never be direct connected to the beater, since the roll is set on spring bearings to absorb the shock should any foreign matter come between the roll and bedplate.

Wound rotor induction motors are the most adaptable for beater applications. The maximum power is required after the beater is filled and the roll lowered in position, the load falling off slightly until the beating is completed. Broke beaters require slightly less power than shock beaters, the requirements being 1.5 hp. per inch of roll face.

In order that the stock to the beaters may be of uniform consistency, the various grades of pulp pass over deckers or pneumatic thickeners into stock chests equipped with agitators. Each grade of pulp has its own deckers, chest and agitators, the mixing of the grades being done in the beater. The power requirement in connected load for these applications, together with the necessary stock pumps, may be taken roughly as 2 hp. per ton.

Jordans

Jordans are of various sizes and capacities, and the power requirements vary as to the density of the stock, and the length of fiber. A Mammoth jordan of 5,000 lbs. per hour capacity requires a maximum power of 200 hp. or 80 hp. per ton per hour. The average requirement is 60 hp. per ton per hour. For estimating purposes, the rating of motor required is .04 hp. per pound, which when multiplied by the lbs. per hour will give the size of motor required.

Since the friction load is negligible, this application is well suited to the synchronous motor, which should preferably be direct connected to the jordan by an extension coupling to allow for manipulating the plug controlling the cutting of the fiber.

The total requirements in connected load per inch width of paper machine for all of the above equipment constituting the beater room applications will vary from 5.5 to 6 hp., and when the requirements of the clay and size department are added, the required connected load will vary from 6 to 6.5 hp. The aver-

age power for these departments will be around 5 hp. per inch width of paper machine, but this figure should never be used for estimating purposes.

Paper Machine Constant Line Auxiliaries

The wet end equipment of a paper machine includes stock, fan, white water, and freshwater pumps, vacuum pumps, plunger pumps, bird screens, agitator pumps, etc.

All of these applications may be driven from one motor, or from individual motors, or they may be grouped in small groups of two or three applications, and each group driven from a separate motor. Where all applications are driven from one motor, that motor should be a wound rotor motor; the one motor drive applying to the smaller types of paper machines.

On large news and book machines, with a few exceptions, the drives are mostly individual, the vacuum pumps being driven from synchronous motors direct connected to the pumps, to maintain a constant speed under all conditions of load. The fan pumps and stock pumps should be direct connected for the same reason, since any belt slippage is immediately indicated in a variation in the weight of the paper. Standard squirrel cage induction motors are adaptable for the various applications with the exception of the vacuum pumps, unless the motors are located where they are subjected to a constant shower of white water from the overflow, in which event they should be totally enclosed, and equipped with ball bearings.

The maximum power requirements in connected load for the above applications will vary from 1.57 to 2.2 hp. per inch width of paper machine; the first figure being for machines up to 146 inches; the latter for machines up to 304 inches.

The power varies slightly at different speeds, and for the average power requirements, the following formulæ may be found useful.

Aver. hp. = .0025 to .003 x width in inches x speed in feet per min. The figure of .0025 is to be used in estimating the power required for machines up to 196 inches; the figure of .003 to be used for machines up to 304 inches in width, when making book and news and without suction presses.

Power Requirements for Paper Machine Drive

The drive of an electrically driven paper machine consists of several sections, each section being driven by a separate motor. At the present writing, all paper machines operating by sectional drive are driven by direct current motors. There are at present three or four drives on the market which are operating successfully. These types differ in the manner in which the various sections are interlocked or held in control so that the various sections travel at the same speed. Some employ a straight electrical interlock, while others employ a combination of electrical and mechanical interlock. The number of sections driven by separate motors will vary from 7 to 10, depending on the type of paper machine and the grade or grades of paper manufactured. The usual layout of a sectional drive is as follows: couch (1), presses (2) to (3), dryers (1) to (3), calenders (1) to (2), reel (1) or driven from one of the calender sections, and in some cases (1) rewinder. It is not at all necessary to operate the rewinder as a part of the sectional drive, since in most cases the sheet is finished at the reel, the rewinder being a separate and distinct unit.

Compound wound motors equipped with interpoles connected to the sections through herringbone reduction gears have so far proven the most satisfactory.

The maximum power in connected load required for a given paper machine will vary with the width of the machine. Following are the actual requirements for four different width machines.

Width of Machine in Inches	Horsepower, Connected Load
146-inch	2.5 hp. per inch width
164-inch	4.08 hp. " " "
264-inch	5.4 hp. " " "
304-inch	5.67 hp. " " "

The average power varies as the speed of the machine, and also as the width of the machine. From several tests taken on machines of the above widths. the following figures of average power were derived, and when stated as formulæ:

Hp. = .003 to .0036 x width in inches x speed in feet per min. for a 146-inch machine.

Hp. = .00215 to .00264 x width in inches x speed in feet per min. for a 164-inch machine.

Hp. = .00304 to .0035 x width in inches x speed in feet per min. for a 264-inch machine.

Hp. = .00323 to .00356 x width in inches x speed in feet per min. for a 304-inch machine.

In all of the above tests, it was found that the higher the speed in feet per minute, the lower the multiplier required. For instance, on the 146-inch machine, the multiplier .003 was derived from a speed of 400 feet per min., while the multiplier .0036 was derived at 350 feet per min. Also, on the 304-inch machine, the figure .00323 was derived at 1,250 feet per min., and the figure .00356 at 1,200 feet per minute. In all of these tests, the rewinder is taken into consideration.

Paper Machine Dry End Auxiliaries

These consist of the cranes, the trimmer used in connection with the rewinder, calender blowers and calender jacks. On most machines, the trimmer knives will operate from 5 hp. induction motor. The number of cranes per paper machines vary from 1 to 2, and they must have a capacity to handle the paper rolls from the reel and rewinder. Direct cur-

rent motors are best adapted for crane service, although in a great many instances alternating current motors are used. When direct current motors are used, they are generally of the series type.

The calender blower motors will average from 5 to 15 hp. connected load, per calender, depending on the width of the paper machine, or approximately .04 hp. per calender per inch width.

The calender jack motors for lifting the rolls are gear connected to the jack rods, and may be either squirrel cage or wound rotor induction types. The power requirements in connected load for the jack motors depends on the weight of the rolls and will vary from 1 hp. on a 146-inch machine to 15 hp. on a 304-inch machine. These motors have a reversible control and are operated by a start-run-stop button.

Finishing Room Equipment Requirements

Supercalenders—A 72-inch supercalender requires four motors. The main motor being a 75 hp. wound rotor induction motor; the inching motor being a 10 hp. squirrel cage induction; the oil pump motor a 3 hp. squirrel cage induction; and the reel motor, a 5 hp. squirrel cage motor. In all, the requirements are 93 hp., or 1.29 hp. connected load per inch of calender width.

Sheet Cutters—If sheet cutters are utilized, the motor rating per cutter in connected load will average around 9 hp. These cutters should be driven by direct current motors having a speed range of from 450 to 1,800 r.p.m. Shunt wound motors equipped with compensating windings are recommended for this duty.

Rewinders—The rating in connected load for rewinders is approximately .137 hp. per inch of roll face. Either variable speed induction motors or direct current motors are applicable, the latter being preferred.

Hoists and Cranes—The finishing room hoist and crane motors should preferably be direct current, and of a capacity to handle any size roll.

Summary of Paper Mill Requirements

From records kept of a book paper mill over a period of four years, the average power requirements for all motors in connection with the paper mill proper, from the clay and size department to the finishing room were 32.1 hp. per ton of production, the highest figure for any one machine being 35.5 hp., and the lowest being 28.8 hp.

Water Supply Power Requirements

The water supply power requirements for a given mill varies as to the source of the water, the condition and quality of the water and the distance it is pumped. Where a supply of pure water can be had, the power requirements are naturally smallest, and where the water has to be filtered, the requirements are greatest. Where a supply of fresh water is available but has to be pumped a great distance, the additional booster pumps required to reach a given head will bring the requirements somewhere between the extremes.

The following table shows approximately the quantity of water required in the manufacture of a ton of product:

Groundwood	63,000	gals.	per	ton
Sulphite	81,000	"	"	"
Bleaching	16,000	"	"	"
Soda Pulp	60,000	"	"	"
Sulphate	60,000	"	"	"
Paper	50,000	"	"	"

Where the supply is convenient and does not have to be treated, the power requirements will approximate .017 to .2 hp. per 1,000 gals., but where the supply has to be filtered and treated, the requirements are approximately double, or between .032 to .04 hp. per 1,000 gals. A figure of .034 hp. per 1,000 gals. was obtained from the average requirements of a combined sulphite and groundwood pulp and paper mill covering a period of three years.

Either squirrel cage or synchronous motors are adaptable for water supply applications, the latter if the units are few in number and high in rating, the former if the units are great in number. Smaller units are probably the best, since if one unit is down for any reason, the whole plant is not seriously affected. Where the pumping station is situated at some distance from the mill, it is best that the pumps and motors be controlled automatically so that in the event of power failure, the time delay is cut to the minimum. Unless the pumps and equipment are located where there is danger from the station becoming flooded, the motors may be standard, otherwise the windings should be moisture proof.

Steam Plant Motor Driven Auxiliaries

In a steam plant where run of mine coal is used, and the furnaces are equipped with mechanical stokers, the power requirements will vary with the type and ratings of the boilers, and the operating conditions. For an up-to-date plant having a few high rating units, the actual requirements in connected load may vary from .3 to .5 hp. per nominal boiler horsepower rating, where the auxiliaries include such applications as coal crushers, elevators and conveyors, stoker drives, induced draft and forced draft fans, ash disposal drive, and feed water pumps. In a two unit plant, the actual requirements in connected load was found to be .457 hp. per nominal boiler horsepower. This load was divided among the various applications in the following manner:

Feed water pumps..	.18	hp.	per	nominal	boiler hp.
Forced draft fans...	.106	hp.	"	"	" "
Induced draft fans..	.144	hp.	"	"	" "
Coal and ash handling equipment..	.027	hp.	"	"	" "
Total	.457	hp.	"	"	" "

The normal load in the above case never exceeds .3 hp. per nominal boiler horsepower, since it is seldom that all auxiliaries are operating at their full ratings, and all auxiliaries are never in operation at any one time.

Types of Motors

For the feed water pumps, high speed squirrel cage motors direct connected to the pumps are ideal, and unless the motors are located where they are

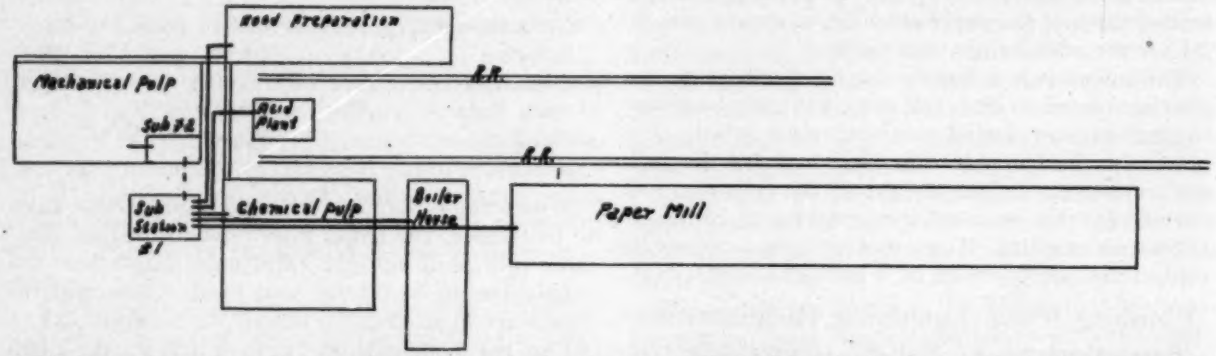


Fig. 5—Power for mechanical or groundwood pulp mill taken from station No. 2 which is fed from station No. 1. No. 2 will usually have a higher rating than No. 1. All other departments supplied from station No. 1. (Solid lines indicate overhead lines; dotted lines indicate underground cable—high voltage)

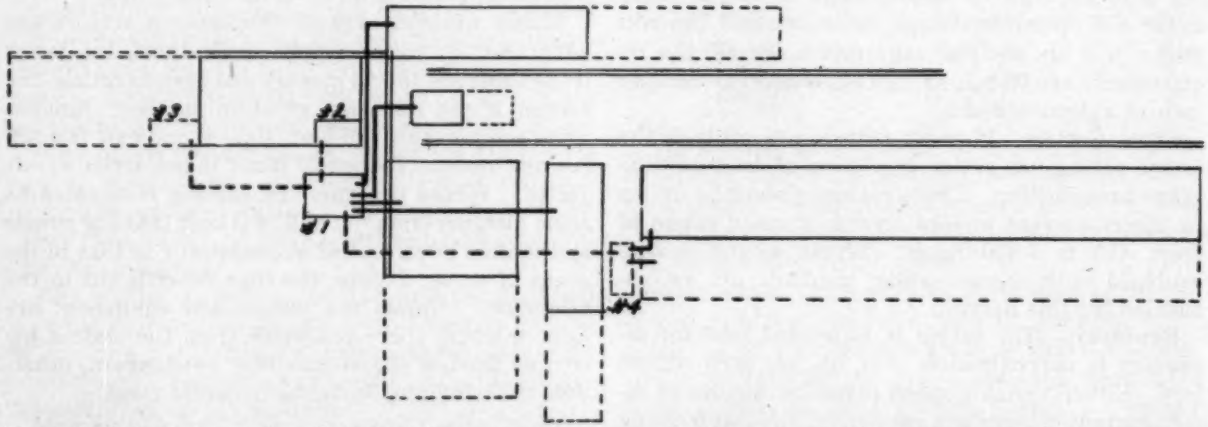


Fig. 6—With the output of the mill doubled, four stations are shown. Numbers 2, 3 and 4 being fed from No. 1 but at the same incoming line voltage run underground. Low voltage feeders originally feeding paper mill, now feeding additional load in wood room, chemical pulp mill, boiler house and acid plant

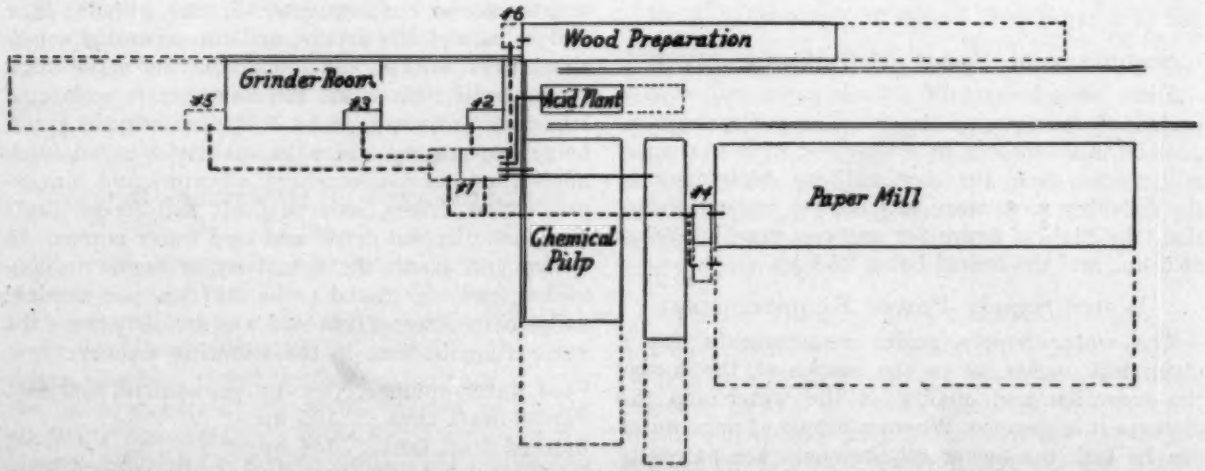


Fig. 7—Assuming the mill has reached an output of six machines, two substations Nos. 5 and 6 have been added, while Nos. 1 and 4 have been increased. No. 4 is now fed with two cables, while the load originally taken by the wood room is absorbed by the additions to the chemical pulp mill, boiler house and acid plant. No. 1 was increased to make provision for the three additional high voltage outgoing circuits

subjected to moisture, coal dust and ashes, standard motors may be used; otherwise it is more economical to use totally enclosed, ball bearing motors.

The forced draft and induced draft fan units are duplex drive; that is, each fan is driven by two motors. These motors, which are wound rotor induction, are direct connected to the fan shaft at each end. One motor usually has one-half the rating of the other, and approximately two-thirds of the speed. The fan is started by the lower rating, low speed motor, and when the maximum rating is approached, the higher rating, high speed motor automatically picks up the load. Decreasing the speed of the fan reverses the operation. If long life and greater operating economy is to be expected of these motors, which are usually located where coal dust is prevalent, they should be of the totally enclosed type equipped with sleeve bearings, unless the temperature of the surrounding air is below 90 degrees Fahr. when ball bearings may be used.

The coal and ash handling motors should be totally enclosed squirrel cage motors equipped with ball bearings, and their control should be interlocked in such a manner that it is impossible to start them in any way other than in their proper sequence. Assuming the coal handling equipment from the pile consists of a conveyor for transporting the coal to the crusher or pulverizer, the crusher or pulverizer for reducing the coal to its proper consistency, a bucket conveyor to transport the coal to the distributing belt conveyor over the coal bunkers, and the distributing conveyor, the proper sequence is to start the motor driving the last mentioned equipment before any of the other motors, and working back to the first mentioned. By means of the interlock system, it is impossible to start any one motor unless the one ahead of it is first started, thus making it impossible to block the crusher, leg or conveyor from the storage pile.

The stoker drives may be operated by either one, two or four-speed squirrel cage totally enclosed motors having automatic control. Four-speed motors should be used for greater economy in the use of fuel.

The Power Factor of a Pulp and Paper Mill Load

In every up-to-date pulp and paper mill, especially where groundwood or mechanical pulp is manufactured, it is a simple matter to maintain a high value of power factor owing to the fact that in nearly every case, the grinder motors are of the synchronous type. In a pulp and paper mill manufacturing newsprint, the output of pulp will average around 75 per cent groundwood and 25 per cent chemical pulp, and the power factor of the load in this type of mill will be anywhere from 95 per cent lagging to unity, if the grinders are motor driven by synchronous motors.

With motors of the types mentioned throughout the text fitted to the various applications, the power factors of the various departments will average the following values:

Wood preparation—load, all induction motors—power factor 75%
Chemical pulp—load, all induction motors—factor 85%
Water supply—load, all induction motors—power factor 75%
Steam plant—load, all induction motors—power factor 70%
Paper Mill: Jordans and paper machine, synchronous motor drive; balance of applications, induction motor drive .....power factor 92%
Paper mill: Jordans, only synchronous motor drive; paper machine, steam turbine drive; balance of applications, induction motor drive .....power factor 85%
Groundwood mill: grinders, synchronous motor drive; balance of applications, induction motor drive .....power factor 97%
Power factor of total load 95%

The above figures were obtained in a two-machine book mill.

Load Factor of a Pulp and Paper Mill and Its Effect on Transformer Ratings

Practically all pulp and paper mills have a high annual load factor, but in those mills where electric steam generators are used, the annual load factor is maintained at 100 per cent. Even where electric steam generators are not used, annual load factors of 70 per cent are quite common, and cases are on record of as high as 85 per cent for a given month, and 95 per cent for a period of twenty-four hours.

A high load factor has a direct bearing on the ratings of the transformers for the reason that the higher the load factor, the nearer the average and maximum loads are in value, and when the average load approaches the maximum load, the transformers are operated continuously at nearly their maximum ratings. It is on account of the high load factor obtained in most pulp and paper mills that the power transformers should have a rating of at least 125 per cent of full load rating.

Layout of Power Distribution

The layout of a power distribution system for a pulp and paper mill depends on the type of the plant, the source of power, and the location of the buildings. The greatest user of power is the grinder room, the paper mill next, the chemical mill or mills next, and the water system, wood handling, steam plant, acid plant, etc., following in the order named. The ideal layout has the transformer substation situated as near as possible to the greatest load, with feeders running to the various departments. It is not always possible to have these ideal conditions, since some mills are built piecemeal; starting as one or two

machine mills and gradually growing into mills of from six to ten and even more machines. Where a mill is built up in units, the best method of laying out the distribution system is to provide for the present and let the future take care of itself. It is poor economy to provide for future machines, or equipment of any kind, as by the time it is required, the equipment is either obsolete, or so out of date that it cannot be used or duplicated.

Power should be purchased or generated at as high a voltage as possible, since the higher the voltage, the smaller the transmission lines and cables required. Where power is purchased, the initial transformer substation may be designed to hold additional oil switches, incoming lines and metering panels, and a few outgoing feeders. The initial station thus becomes the main station if others are later provided, and may eventually be the smallest station of all in point of transformer rating.

Where power is generated, the station may be designed for enough turbo-generators to provide for present needs, with provisions made for extending the building, switching equipment, panel boards, and additional generators as the increase in load warrants, making each unit added a distinct unit, whether all units are the same or are different.

Power companies usually insist that all power for a given industrial plant be metered through one totalizing meter, so that all that is required to extend the system of distribution is to supply the outgoing feeders and individual meter panels for other stations that are required as the plant is increased Figures 5 to 7 show typical layouts where the distribution system has grown from a small beginning. Fig. 5 shows the original distribution layout; Fig. 6 the layout after the first extensions have been made, while Fig. 7 shows the layout further extended. There is practically no limit to which a system of this kind can be extended, and the cost of distribution can be kept to a minimum. Cables that have to be moved to make way for a new installation can in practically every case be utilized for some other purpose, and there is never any over-capacity cable lying idle.

Costs

A Conversation Between Two Workers in an American Pulp and Paper Mill

By JAMES JAYNES

This article has been prepared by the author for the purpose of presenting a simple lesson on Costs to mill operatives. References to "blocks" throughout the article are illustrated only by designation, no attempt having been made to show their true proportions—Editor.

"HELLO, Bill."

"Hello, Jim."

"What's the news, Bill?"

"Nothing new, Jim, 'everything quiet along the Potomac!' That makes me think, have you seen the sheet of bond they are running on No. 5 machine, Jim? It is the best sheet of bond we have ever made; looks as if it was made of at least 50 per cent rag, dandy formation, the highest test we have ever run, and a nice high white color. The company must make a pile of money. I wish I had all they make in one day. I would be willing to loaf the rest of the year."

"How much do you think they make on a pound of paper, Bill?"

"I don't know, but I should think they would make at least two cents a pound."

"Are you sure of that, Bill?"

"No, I am not sure, but I was judging by the car the Boss drives and the way his kid spends the old man's money."

"I will grant the Boss has a good car, but if I guess correctly I think he would prefer a Ford. I really think he is driving that big car just for business reasons. You know we have a number of our customers come here to visit the mill and generally the Boss takes them downtown for lunch. That is when he needs the big car and I think that is the reason he drives it. As to the kid spending money, a great deal depends upon the care given in raising them; you know that the Boss is all business and he lets some other people raise the children. You know the kid was not that way before his mother died. Now getting back to these profits you were talking about, Bill. I have thought a lot about them myself but this is how I have doped it out.

"Let's do a little figuring ourselves and see what we can find out. First, let's put down what we sell—loan me that piece of crayon, Bill, I like to talk with a pencil in my hand. The company sells pulp and it sells paper; that's all, is it not? All of our income will come from the sale of those two articles. Now I am going to let this column or block represent what we get for all

Income from Sale of Pulp

the paper we sell, and then I am going to put another block on top of it to represent all the pulp we sell. Now from this income, the company must pay all of its expenses or costs. Let's see what some of these costs are. First, we have the cost of the land upon which the mill is built—we will let this block represent it. Then it cost something to put up all of these buildings, which we will represent with this block; it will have to be just a little larger because they cost more than the land.

Cost of Mill Property

Cost of Buildings

"After the land was bought and the buildings put up, the equipment had to be purchased. Now when you stop to think that one paper machine costs over $100,000, and we have a pulp mill as well as a paper mill to figure in it, so we will have to make this block larger than the one for the buildings.

Cost of Equipment

Income from Sale of Paper

"Next, we must have a block to represent the cost of the company's timber lands from which we get our wood to make our pulp and paper.

"We are now ready to start our operations, but before we do that, all of the money invested for the property, putting up the buildings, buying the equipment and the timber lands had to be paid for by somebody, and those people who did pay for it want to get something out of it. They at least want interest on their money.

Cost of Timber Lands

"We will now make a list of our operating expenses. The first thing we want to put down is interest on our investment and we will let this block represent it.

Interest on Money Loaned to Build Mill

"Next, we have the taxes to pay—somebody has said that death and taxes are what every one has to meet, so we put down this block for them."

Taxes

"Jim, taxes ought not be very much."

Taxes—City, County, State, Federal, Income, Capital, Corporation, Sales, Automobile, Gasoline.

"Well, there is ten already, and I have heard that we have to pay a tax to certain states just merely for the privilege of doing business there. There are some other taxes which I know about because I heard Mr. Allen, our treasurer, tell Mr. Ryan that the company paid twenty-three different kinds of taxes."

"I did not know that the company had so many different kinds of taxes to pay, Jim."

"The next thing we want to put down is wages, and believe me that is some block, because I heard one of the office fellows tell another one that the pay roll for a plant of the size of ours was close to one hundred thousand dollars every pay period, so the wages will have to be a big block.

Wages

"Another big item which costs money is new equipment and such supplies as felts—a dryer felt alone costs about a thousand dollars. Wires are another expensive item way up in the hundreds of dollars, then we have to buy new rolls every month or so. Every time the boss machine tender gets a spasm and wants to put some new idea to a test you can chalk up another hundred dollars. I often wonder if the boss really knows how much some of those experiments cost, for if he does, I am sure he would not let any changes be made on the machines unless it was first approved by him. Then there are the jordan fillings, new plugs, beater bars, pumps and pump repair parts, new grinder stones, valves, pipes, motors, armatures and coils, shafting, automobile trucks, hand trucks, etc.

New Equipment and Supplies

"Every new improvement on any of the machines that is advertised is given a trial. Well, it costs money to do it. This may seem like a needless expense, but it is not, some of these new fangled ideas save lots of money. That new committee which the superintendents' association has—I believe they call it the Mill Service Committee or something like that—will save the company lots of money. The superintendents write of their experiences with these new inventions and tell about them, so that if a company is thinking about trying one out, all they have to do is ask and they can get the benefit from those who have already tried it out. So new equipment and supplies will be represented by this block.

"Then we have to buy such raw material as sulphur, lime, salt cake, carbonate of soda, chlorine, and other chemicals, which we will represent by this block.

Raw Materials

"Another item which I almost forgot is coal. You know I'm not sure, but I think I heard our chief engineer say that we used over five hundred tons of coal every day. Believe me, that cost money. Then when the boilers are down we have to buy our power from the power company, so we will let this block be for those two items, coal and power.

Coal and Power

"Then there are a whole lot of small supplies, such as oils, grease, paints, lumber, bolts, nuts, rivets, sheet iron, copper, belts, cement, brick, electrical supplies, hose, ladders, ropes, and a thousand and one of small things, which we are

Small Supplies

constantly buying and have to have in order to keep the mill running. We will represent all these with this block.

"Another item which costs the company a lot of money is insurance. Have you ever stopped to think what the company pays out for its insurance? Just for the fun of it, let's make a list of the various kinds of insurance which we know they are carrying."

Insurance

Different kinds of insurance—Fire, Accident, Liability, Life, Flood, Boiler and Flywheel, Group, Use and Occupancy, Pay Roll, Credit, Automobile.

"I would be satisfied to take what the company pays for its different kinds of insurance for my pay.

"Another group of expenses which the company has to pay and should be added to our list is transportation. Freight on all of the wood which comes by rail as well as other supplies. Then there are the express charges. Just the other day, while I was in the store room, a casting for an Oliver filter came in, and the express charges were over a hundred dollars on just that one thing. Now that seems like an awful amount to pay, but in order to get out a certain order we had to have the casting here. It was one of those times when the company is between the devil and the deep sea. It just had to come by express. We will let this block represent transportation.

Transportation, Freight & Express

"I don't think that I have all the expenses which we have here in the mill, but what we do have will be enough for the present, so let's see what we can find in the office. First, all new equipment, such as typewriters, adding machines, steel file cabinets, and the supplies which are used there, as well as the printing of all the different forms we use throughout the mill. Then there is the postage as well as the parcel post we send out. Telegraph—have you seen all the telegrams that are sent out every week—and the telephone bill? I'll bet that is a big bill every month—why, I have heard our salesmen call up the different branch offices in Boston, New York City, Philadelphia, Cleveland, Detroit, Chicago, St. Louis and New Orleans, just like my wife calls up her mother every day and her mother only lives three blocks away. That telephone bill must be a big one, yet they must do it, because it means business. Nearly every call means an order and it is the orders that keeps the wheels in the mill going and that means bread and butter for you and me.

Postage, Telephone and Telegrams

"Another item which they have up there in the office, and we don't hear very much about it either, is donations, but it is there just the same. A hundred dollars for this one, fifty dollars for that one, and twenty-five for the next, then when the mayor wants to put on some celebration he comes to our boss to head up the list because he knows the boss is always generous and likes to do things for others. Sure, the company is rich and they will not miss it. It's good advertising, so the ones doing the collecting say. Guess we had better let this block represent donations.

Donations

"Now that makes me think, the company does do a lot of advertising in the various magazines, programs, etc. This helps to get our company before the public and it brings in the business, so we will let this block represent it.

Advertising

"The company also has to have salesrooms or offices in most of the larger cities. It is necessary to have these offices in a well-known building which is convenient for the customers,—thus, at times, in buildings with high rents. It surely costs money to keep them up. Then there are the salaries of the salesmen, and if you want a good salesman you surely have to pay them, because they are the ones that get the orders and it is the orders that keep the mill going. These salesmen have to travel around and we have their travelling expenses too. Every now and then and especially when a big order is at stake, it is necessary to entertain the customers to a supper and possibly a show, all of which costs money, and the company has to foot the bill. So we will let this block represent the sales offices in the various cities.

Sales Offices, etc.

"Bill, I almost forgot to put down another bunch of costs which we do not hear about very much, and that is our welfare work. The company does not publish that from the house tops but nevertheless it does it just the same. I believe the widows of some of our old and faithful workers could tell us an interesting story if they would. So let this block represent that.

Welfare Work

"Another group which we do not hear very much about, but are there just the same, are the suits and damage claims which the company has to pay—not all of our workers feel the way you and I do regarding the company. There is that old 'skinflint' Brown that worked in the wood yard for about six months, then quit and about three months later put in a suit against the company, he took it over in the next county where the people were not so friendly towards us because they said water from the mill killed all the fishes in the river, so Mr. White, the claim agent, figured it cheaper to pay him five hundred dollars and drop the suit. Now the company also has to have lawyers to defend us in these suits and also for legal advice upon other questions, all of which costs money. Let this block represent it.

Damage Claims and Legal Advice

"Every now and then, the company has to put on

another addition or some big improvement, and it is necessary to get more money from the banks, so they put out a bond issue—or it may be to redeem a previous issue. Nevertheless, the company needs a great amount of money, and it is not advisable to take it out of the business, so they borrow it. Now the banks want interest on these loans, so it is necessary to lay aside a certain amount of interest. Let this block stand for it.

Interest on Bond Issue

"I think you will agree with me that we have a pretty good group of officers and heads of departments with all of our faults. Some of them are among the best in the country, other mills want them and we have so let this block be for the salaries of our officers and high class executives.

Salaries of Officials

"There is just one more item which I happen to think about which we should put down and that is the service of these experts which the boss asks to come in every now and then to clear up some of the problems we seem to have. In just the last few years, I can remember that big expert chemist that was here for about a month on the stream pollution; then there was that engine expert; next came the personnel man; then these efficiency experts, almost all of these experts get a hundred dollars a day and expenses. It all costs money and the company has to foot the bill.

Services of Experts

"I guess there are a number of other costs, Bill, which I cannot think about at this time but here is what I want you to do, just take this bunch of cost or expense blocks and stack them on top of one another. Then compare the costs with the income stack which we started out with. If the income stack is the highest, then the company is making a profit; but if the costs are the highest, then the company is losing money.

"Tell me, Bill, do you think the company is making two cents a pound on all of its paper and pulp?"

"No, Jim, with that big pile of costs, which you have shown me and which I had never thought of before, I don't think they do. I had never stopped to think of the many different things which the company has to pay for; I wonder how they make ends meet. The boss has centainly got a "HE MAN'S" job. I think he deserves all the pay he gets, especially if he has many more coming in the organization. I thought all the money coming in for our pulp and paper outside of our wages and a few other expenses was just **profit.** I see where I was wrong."

"Bill, let me tell you, if the company could make a half-cent profit on every pound of pulp and paper they make I think they would be happy. Competition is so keen between the various pulp and paper mills—each company is shaving off a little here and a little there in order to get the orders so that the mills can be kept running, a fraction of a cent a pound profit looks very good to them. At the present time we have what is known as a 'buyers market,' and there are a lot of orders being taken at a loss, simply to keep the machinery going—the managements do not want to shut down their mills and throw a lot of employees out of work. They have a group of workers whom they want to keep, and if they shut down, some will never come back, as they will go elsewhere looking for work.

"Bill, in a number of mills, due to poor equipment, location, and morale of the workers, the costs are so high that they go above the income. The result is that they are changing officials, being reorganized, or else closed and sold, the workers scattering all over the country looking for jobs. As far as I am concerned, Bill, I am going to work just as hard as I possibly can, so that the company can make more than two cents a pound on all of its product, for the company that is making money is the prosperous company and that is the kind I want to work for. It means that I will have steady employment and that means a whole lot, for I have three kiddies at home to feed and educate as well as the best woman in the world. Let's shake and do our part in making our company a prosperous one. Good-bye, Bill, will see you tomorrow."

An Early Bisulphite Cooking Process

By JAMES BEVERIDGE
Author of "The Paper Maker's Pocketbook", Richmond, Va.

THE conversion of wood into pulp by boiling in bisulphite of soda obtained by the double decomposition of bisulphite of lime and sodium sulphate, both in solution, is interesting from an historical point of view, as well as the manufacturing standpoint; and the following details of the process as carried out on the large scale at Northfleet, England, will doubtless be of interest to present day manufacturers.

The bisulphite acid was made from chalk obtained locally and Sicilian brimstone and had a strength on an average of 5 per cent sulphur dioxide of which two-thirds existed in the free state. It therefore contained approximately 16.7 grams of SO_2 combined with lime, forming 31.3 grams of calcium sulphite per litre. This acid was clear and contained minute traces of iron. According to the formula

$$CaSO_3.SO_2+Na_2SO_4+Aqua=Na_2SO_3.SO_2+CaSO_4 2H_2O$$

the amount of sodium sulphate required to decompose the bisulphite of lime was 37.0 grams per litre. As a general rule a slight excess over this was used. The preparation of the sodium sulphate liquor from

crude saltcake consisted simply in dissolving the "cake" in hot water and neutralizing the free acid with lime in order to precipitate the ferric oxide and alumina. This solution was made so that it contained approximately 100 parts of Na_2SO_4 per litre. Into a large covered wooden tank, about 8 ft. deep with circular ends, lined with sheet lead, and provided with two agitators driven from the outside by spur gearing, the bisulphite of lime and sodium sulphate liquors were brought together in the proper proportion, yielding a liquor of about 3.8 per cent total SO_2. The precipitation of the hydrated calcium sulphate ($CaSO_4 2H_2O$) takes place at once, but in the cold it separates out as a light flocculent precipitate, and as this was very difficult to filter, in order to cause an aggregation or crystallization of the particles, it was found necessary to heat the mixture with injected steam to about 120 deg. Fahr. At this temperature the calcium sulphate falls as a dense powder and settles rapidly. The conversion of the calcium bisulphite into the sodium salt is not complete, two-thirds or more, of the sodium sulphate being changed to calcium sulphate, but as the latter is thrown down in the hydrated state, for 100 parts Na_2SO_4 added there is obtained 80 parts $CaSO_4 2H_2O$. A portion of this latter is lost during the washing and not more than 65 per cent yield of the hydrated calcium salt was obtained per 100 parts sodium sulphate. The precipitate is pure white and after passing through a hydroextractor was dried, ground and sieved, and finally used as a loading or filler in high grade writing and printing papers. The necessary precautions were taken to prevent the escape of sulphur dioxide, and also loss in washing the precipitate, otherwise the consumption of sulphur ran high. All vessels containing the acid liquors were covered, and drawn to the towers. The weak washings were also passed to the towers and used there instead of fresh water.

Compared with modern practice it may be thought that the acid produced by this process was weak but obviously this could be adjusted. The conditions under which it was used were however quite different to those prevailing today. The Norway spruce obtained from Gulf of Bothnia ports was peeled before shipment and on arrival, was stacked in the mill yard for nine or twelve months before use, and when entering the woodroom seldom contained more than 23 per cent moisture. The chips were separated into two or sometimes three grades with a winnowing machine invented by the late Wm. Carl Bache-Wiig. Eighty-five per cent of the chopped wood passing through this machine were first grade chips; the other two grades (knots and sawdust) were usually boiled together to second grade pulp. The digesters were small, yielding about 2,832 pounds air-dry pulp per charge. They were steam-jacketed throughout their center body, excepting the top cone which was removable. The inner shell was lined with heavy sheet lead held in place by a series of concentric rings, into the recesses of which the lead was hammered before burning. The boiling was carefully conducted and occupied from 16 to 20 hours; steam consumption by actual measurement, 8,556 pounds per boil, equivalent to 6,043 pounds per ton pulp. These digesters were filled to the spring of the cone with chips and the acid pumped in through a valve in the helmet surmounting the cone until the chips were completely covered. When the heating began the release valve in the helmet was kept slightly open to allow the SO_2 gas to pass to the towers after cooling. As a general rule no acid was allowed to escape until the cook was pretty well advanced, and only then in small quantity. A sample of the liquor at the end of the cook usually gave 0.20 to 0.25SO_2 with iodine, and at that point the pressure was blown off into a cooling apparatus, the SO_2 gas going to the towers; the liquor to the sewer. The charge from these digesters was dumped into large wash tanks provided with a perforated tile bottom and agitator, where the pulp was washed with successive quantities of hot water. When the cooking was conducted to yield soft easy bleaching pulp, the consumption of chlorine was about 2½ per cent, equivalent to 7 to 8 per cent bleaching powder.

This process is obviously complicated and necessitates additional plant and machinery, but in these modern days more simple ways can be obtained to filter, wash, dry and grind the hydrated calcium sulphate. Where this is used directly in the mill as a filler, it may be ground wet, thus cutting out the drying, grinding and sieving operations. Of 100 parts of the dried filler not more than 50 to 55 parts (as $CaSO_4 2H_2O$) were obtained in the finished paper; that is to say, from 32 to 35 parts of the total yield of precipitate were recovered or utilized. This was largely due to the solubility of calcium sulphate being greater in cold than in hot water, and that no special means were adopted to use more than the usual quantity of white water on the paper machine.

This in brief is what took place at Northfleet, England, in the early nineties, and it seems doubtful to the writer whether the process will ever have any commercial value having regard to the present cost of the raw materials required, and to the fact that bisulphite of lime, or a mixture of lime and magnesia (from dolomite), in point of cheapness, cannot be rivalled. As L. J. Dorenfeldt has indicated, the waste liquor from the process can be concentrated and used instead of salt cake in the sulphate process, but the presence of calcium sulphate in these waste liquors is a serious hindrance to realizing even this.

It becomes increasingly obvious that a little more market research and far-sighted sales planning would have saved much of the grief and many of the casualties which have occurred in the last few years. —Dr. Julius Klein.

Men and Management

Some Plain Words on Human Relations

By M. W. HEDDEN
Raequette River Paper Company, Potsdam, N. Y.

CONVENTIONS, no matter what kind, papermakers' or otherwise, are often the source and occasion of platitudes. One gathers from reports of various meetings that a good mill executive, in addition to knowing something about the paper business, must also be a good diplomat and a disciplinarian.

In our revulsion from the Simon Legree type of executive we are showing signs of going to the opposite extreme. Speakers have laid down specific rules, such as "Reprimand with a smile," "Greet your employees with a smile," "If you feel like cursing, try smiling." While we all appreciate a smile—"that outward and visible evidence of kindliness"—that of itself is not sufficient for the working man of to-day.

For real despotism search first among those who are invested with a small amount of authority. One man after giving instructions to his crew, habitually stood glaring at them for a moment, then with a jerk of his head added in a commanding tone, "And see that you do it." The men would follow his instructions to the letter, hoping devoutly for some flaw or mishap which would show the boss up. There was about the same quality of co-operation that one would expect to find between prisoners and their keeper.

At the same time, this foreman resented bitterly a "bawling out" from his superintendent; the superintendent might make threats in attempting to correct the foreman's mistakes, but he most decidedly did not enjoy hearing them from his manager; the manager was known for the biting quality of his sarcasm but he would feel as aggrieved as anyone else when the president "rubbed it in." Yet none of them ever seemed to realize that the lowliest employee would also appreciate tact and consideration.

The Worm, Discourtesy

Just as discourtesy on the road causes more accidents than wet pavements and all other physical conditions, so is its presence in the plant one of the greatest factors in labor turnover. Lack of interdepartmental fairness often wrecks co-operation and causes inestimable loss. However, these faults are hard for the management to put a finger on.

A certain superintendent worked long hours and faithfully for more than two years. He had brought his department from a bunch of junk into a high state of efficiency. Then he sought his immediate superior and asked for a vacation. This man was noted for hiding a kind heart under a crusty exterior, but in the two years of association the assistant had not succeeded in penetrating beneath the crust. True to his usual form, the executive responded with an ungracious "I suppose you can—I never had a vacation," and turned away.

Two weeks later the superintendent handed in his resignation. The managers were shocked. They offered an increase in salary and other inducements, but the weary superintendent had endured two years of discourtesy and knew when he had enough. His employers, at a loss to understand his action, finally concluded his wife had perhaps become homesick or dissatisfied with her surroundings.

Shifting Responsibility

In many plants the favorite diversion is that of passing the buck. Paper mill men seldom waste time in investigating the cause of complaint but shift it immediately to the sulphite, the beaters, or even the bleach plant. The sulphite mill hands it over in turn to the wood preparing department or the steam plant, who pass it on like a hot potato to the nearest neighbors. In their haste to clear themselves many men miss an opportunity for improvement through constructive criticism.

Here is an opportune time for the executive to propound: "We are not planning to hang anyone for this: what we want is to get down to brass tacks and prevent a recurrence. In the final analysis, unsatisfactory product comes back on all of us equally—every one from the logger to the bookkeeper suffers. A little team work is more to be desired than many alibis."

Friendliness and Respect

An old man with great understanding used to say: "Get acquainted with your neighbor—you might like him." It is unfortunate that the heads of so many large organizations are strangers to their employees. When the men read that their president has given a park to some city, or a library, or endowed a college, they cannot be criticised if their thoughts some times find expression to the effect that: "We wish he would come down here some day and endow us with a decent ventilating system."

At the other extreme is the employer whose interest is perhaps more than fatherly. He sends investigators into the homes of his men to tabulate information in answer to such questions as, "Are you saving anything? Do you buy on the instalment plan? How much is your grocery bill?" and

other questions of such personal nature that the householder shows remarkable self-restraint in not having the dog escort the unfortunate statistician to the front gate.

At some point between indifference and paternalism lie mutual respect and the ark of safety.

Smaller organizations, permitting to a degree personal acquaintance between owners and employees, have a decided advantage in many ways. It is impossible for suspicion, fear and apathy to exist in an atmosphere of sympathy and understanding.

Executives cannot be guided by set rules in dealing with paper mill workers; no other industry draws its men from more varied lines of endeavor. Its employees may include politicians, teachers, bootleggers (both amateur and professional) itinerant preachers, and anybody's nephew who happens to be in need of work. Surprises enliven the monotonous hum of machinery. An individual in shabby attire may prove to be the president of the board; a chap with an Oxford accent is perhaps the storeroom clerk, and men who least look the part are apt to be related to the mighty. This brings to mind the complaint of favoritism which is met with in all organizations.

A Story of Favoritism

A man of exceptional mind and education having met with misfortune, worked for a short time as a mechanic in a paper mill controlled by a relative. He did his tasks well and thoroughly enjoyed the experience of being brought into contact with all branches of papermaking and all classes of papermakers. He whimsically remarked one day that the manager was handicapped by nepotism and was enormously pleased when he heard a workman ask what nepotism was, to be assured by his partner that it was "something like neuritis—just nerves."

"Just nerve" might describe rare cases, but preferring one's own family is a very human and loyal trait and as a general thing no criticism can justly be made against it. One case which concerns a well-known member of the industry is a classic.

Several years ago a lad who may as well be called John was employed in a lowly position for a wage which would not now supply a boy with picture show money. There was dearth of entertainment in those days and flaming youth had yet to learn his pyrotechnics.

The river was polluted with sewage, so a boy was employed to carry drinking water from a spring. It occurred to young John that a generous coating of grease applied to a steep runway just inside the door would provide spirited action when his friend the boy returned with two large buckets full of water. The workmen also watched hopefully for the boy, so there was an appreciative audience when the night superintendent came briskly through the door, stepped on the grease and skidded in reverse position until stopped by a pile of wet pulp at the foot of the runway. He was a large man and the injury to his dignity was considerable.

It is scarcely necessary to add that young John found himself out of work. A few weeks later his uncle became superintendent of the mill and immediately reinstated him. Some of the men, especially the night superintendent, considered it a flagrant example of nepotism, though they probably did not call it that, and the boy was given a hard row to hoe. He acquired valuable experience, however, and eventually his natural ability received recognition. Probably the hardest task he encountered was to live down the charge of favoritism.

Ardent advocates of self-expression have advanced the theory that students, not the school boards, should be allowed to choose and hire their teachers. Possibly we may reach the altruistic state where employees will be allowed to select the various executives in an organization. We wonder what qualities they would seek—the man who smiles and greets them affably? the gifted speechmaker? or one in whose fairness they have confidence, secure in the certainty that he will see them through?

To the average mind, unlimited latitude in self-expression would not seem to be a panacea for the unrest encountered today. There are, however, small concessions which the working man might appreciate. Among them is less talk of "labor control," which has an unpleasant sound. To speak of management is something altogether different. No man would deliberately choose to be controlled, but management may be entirely painless, and even pleasant, as every married man can testify.

The True Essence of Adventure

How does safety apply to our everyday life? Does it urge us to sit at home like frightened rabbits with dogs barking at their holes, to be cowards, afraid to face the dangers of modern life, and eke out our days like misers hoarding a life of useless days? It certainly does not. "Safety First" might be interpreted as opposing the great American spirit of courage and advancement. On the contrary, the safety movement is the very essense of American adventure and progress. Its object is to preserve for every one the big and real things in life. Safety is simply saying: "Think of the dangers involved before you start a job, not after you have started it. Look before you leap—whether you are a pedestrian crossing a street, or an autoist speeding across a street intersection—think first. Know the dangers that you will encounter from day to day, and meet them so that the joy of another day's work will not be changed to the disappointment of failure by needless accidents." That is what safety means.—C. E. Pettibone.

Current Thought by William Sibley

What's Ahead in Business for 1930

THE financial record of the highly contradictory and confusing year just passed is without parallel. There were days during the crash of late October and early November when the amounts of money lost on the Stock Exchange in a single hour were larger than the amounts spent on the War for Independence, War of 1812, Boer War or the Crimean War. Yet in the same breath we may say, just as truthfully, that the National City Bank's compilations show that business in general will close 1929 with an average increase running close to 20 per cent; that the number of failures decreased 5 per cent over '28, with commercial liabilities more than 7 per cent lower than at the close of the previous year.

1929 is a good year to forget, for while it was unquestionably the most profitable year for business since the war, that business was not the result of sound, well-balanced growth. While 1929 was a boom year in industrial production, it was not a year in which business made its money in its own business. Although a record year in transportation earnings and efficiency (railroads, motor car and airplane) it was certainly not a year of wise saving or sound spending. 1929 was a good year for both agriculture and wage earners but from the standpoint of building, real estate, business efficiency or financial wisdom it most definitely registers red. 1929 is the kind of a year we do not want to see again—at least very soon.

Talking about the recent stock market quake is to talk about something which is no longer interesting. We are pretty well fed up on "stock market" information. Yet it is impossible to attempt introspection without calling forth retrospection—and to consider the past, means necessarily to consider the effects of the Wall Street panic.

Personally, I am of the opinion that the recent stock market crash, however hard on a few individuals, was and is a blessing to the country. The fact that we are now through and passed the inevitable tumble lends optimism to the outlook for 1930. Naturally, after every debacle there is a period of convalescence, but the solidity of our commercial foundation has not been impaired, and this means that we will regain our industrial equilibrium quickly.

The benefit to the country from the market panic lies in the fact that many men who should have been centering their work on their own business spent their time in watching the stock ticker and in risking every dollar in speculation. That period has passed. The country has now come down to earth and this vast nation, with its population of 120,000,000, the most virile, active, aggressive people on the face of the earth, unhampered by the varying laws and relations of Europe and other regions—where jealousies and bitter hostilities exist—will go forward for a larger development and a future infinitely greater than any that could have been brought about by the wild gamble in New York led by financiers blind to the situation or by others who were seeking to gather in all the fleece from all the lambs in the country.

Better than a financial reprimand to those who fell victims of the idea that something might be gained for nothing is the fact that business life has the quality of all nature: it is self-restorative, self-healing. Most of its ailments and misfortunes are self-limited: the doctors can do nothing more than give natural economic forces a chance to operate to repair waste and restore health. So the individual business intelligence upon which prosperity depends is moved by a natural momentum to carry on as usual. The sum total of all these hopes and efforts is a vast force which makes fairly sure that business cannot long swerve from its regular curve which, in this country, must continue to be upward.

Substantial evidence of the self-restorative qualities of business is found in the recent Hoover conferences in Washington. Here we find one industry after another pledging materially increased expenditures and activities for the New Year. From these conferences has come every reason in the world for the confident belief in the maintenance of business activity, wages and employment.

The Steel Industry

Notable among the statements issued during these several Washington conferences was that of James A. Farrell, president of the U. S. Steel Corporation who, when speaking for the steel industry, said:

"Expenditures already authorized and definitely planned in the industry approximate $500,000,000. That is within the industry. Speaking of the industry as a whole, commitments to that extent have been entered into.

"The program of one company calls for $300,000,000 in its 1930-31 budget. The 1930 expenditure has been allotted; that is, the money has been voted and distributed to the different subsidiaries. Precisely this amounts to $160,000,000, and the work is proceeding and will be continued to completion.

"Earnings in the steel industry in recent years were largely expended in plant maintenance. It is well-known to those in the industry that our most modern machinery becomes obsolete in fifteen or sixteen years, so that it requires earnings and surpluses in order to keep up with the times. It is not a question at this juncture of unduly enlarging capacity in our industry, other than keeping in step with the growth of the business.

"The steel plants of the country, having had a good year, will bring plant equipment up to date and contribute their share to general prosperity."

The Electrical Industry

Reporting for the electrical industry, Clarence L. Collins, President of the National Electrical Manufacturers' Association, said that in his judgment the first six months of 1930 will show a decrease in their productive activity of about 3.5 per cent as compared with the corresponding period of 1929.

It was stated that in spite of the slightly increased volume of business at this time, the aggregate figures on inventories show that the situation today is almost identical with that existing last year at the same time. Making approximate estimates for some of the companies that did not report, Mr. Collins said the questionnaire represented an aggregate in man-hours of about 500,000,000 or possibly an annual productive wage of $300,000,000.

A significant fact was that the branch of the industry that represents electrical appliances going into the home, said Mr. Collins, has the expectation of an increase in 1930 over the corresponding period of 1929. The judgment of the executives of companies manufacturing products going into the building industry showed a decrease. A slight recession, it was said, was expected in products going into industrial plants.

It was predicted that the 1930 program of that part of the industry representing the larger electrical appliances, generating appliances, and power distributing appliances, such as go within a large industrial program for public utilities, will be fully equal to 1929. In the electrical products that tie in with the electrification of railroads, a slight recession of business is expected, it was stated. Major contracts, however, it was added, will be reflected in the business of 1931. In capital expenditures, the belief was expressed that those of the electrical industry will be nearly normal.

The Railroads

For the railroads, R. H. Aishton, chairman, executive committee of the Association of Railway Executives, said:

"The situation as of October 1 showed a greater authorized program of railway improvements and capital expenditures under way at that time than in any similar period for the past five years. Briefly, it called for an expenditure within the next few months of $674,000,000 or $272,000,000 more than on the corresponding date in 1928.

"The railroads do not believe there is anything in existing conditions that warrant them to reduce or abandon any part of their capital program. Instead, however, they are proceeding with confidence in the future business prosperity of the country and in reliance upon the full co-operation of industry in all its branches, equally interested.

"In addition to the capital expenditures outlined above, the railways are expending this year $1,300,000,000 or more in the purchase of supplies for operation and maintenance, ranging all the way from soap to steel castings, and $3,000,000,000 in wages to railway employees.

"Both these forms of distribution of money, aggregating nearly four and one-half billions of dollars, the railways expect to equal in 1930 and will represent a direct flow of cash into the channels of trade and industry. This distribution is additional to the $1,050,000,000 that the railways are now planning as their capital program next year."

From the foregoing quotations, selected from three conservative, level-headed men representing three great industries, we find ourselves entirely justified in liberally discounting the wild rumors and pessimistic statements of calamity howlers, and in looking forward to 1930 as a twelve-month period which will liberally reward every one who is willing to work and work hard.

As 1921 rewarded fighters, so even in a larger measure 1930 will reward workers.

The Paper Industry in 1930

The Business Prospect as Shown by Recent Survey Conducted by American Paper and Pulp Association

CONTINUATION of business in 1930 along essentially the same lines as in 1929 is shown by a recent survey of business prospects in the paper industry, conducted by the American Paper and Pulp Association

The volume of business in 1929 broke all previous records. The prospects for a continued increase in volume similar to that of 1929 are not promising, yet indications point to a volume for 1930 which probably will equal that of 1929.

Expenditures for plant improvements and maintenance in 1930 approximating normal expenditures for recent years are indicated by reports from affiliated and grade associations to the American Paper and Pulp Association. A marked decrease in expenditures for the building of new productive facilities, however, is also revealed. This is looked upon as favorable rather than unfavorable because of the present overproduced condition of the industry.

An overproduction capacity of approximately 25 per cent exists in the paper industry. This excess, when viewed in connection with the rapid rise in consumption of paper in the United States during the past decade, evidences the fact that expansion has been more than was needed. This has resulted in weakening the price structure throughout the industry and profit margins have been exceedingly narrow. It is expected that heavy volume and narrow profits will continue throughout 1930.

If there is a slight falling off in volume during the first quarter of 1930, in sympathy with general business recession, it is felt that increased volume during the remainder of the year will bring the total volume to the 1929 level.

Planned expenditures for advertising constitutes one of the best indices of sales volume in certain branches of the paper industry. A recent survey of proposed expenditures, undertaken by the Association of National Advertisers, shows a total for 1930 of $206,000,000 as compared with $186,000,000 for 1929. This increase not only indicates sustained business volume but it is as well indicative of the optimism with which business leaders view the future.

New Institute Ready for Opening

First Institute of Pulp and Paper Chemistry Located at Appleton, Wisconsin, Surrounded by Mills Making Diversified Products

A GRADUATE school of pulp and paper chemistry at Lawrence College, Appleton, Wisconsin, will open its first term in February. The graduate school, known as the Institute of Paper Chemistry, is governed by a board of trustees comprising the leading executives in the various pulp and paper companies lending their support.

Officers of the board are president, Ernst Mahler, of the Kimberly-Clark Corporation, Neenah; vice president, D. Clark Everest, of the Marathon Paper Mills, Rothschild, Dr. H. M. Wriston, president of Lawrence College, secretary and director of the Institute; R. J. Watts, business manager of the college, was elected treasurer of the board; and Westbrook Steele was named executive secretary.

The board of trustees includes in addition to Mr. Mahler, Mr. Everest and Mr. Wriston, Hugh Strange of the John Strange Paper Company, Neenah; Monroe A. Wertheimer, of the Thilmony Pulp and Paper Company, Kaukauna; D. K. Brown, of the Neenah Paper Company; and L. M. Alexander, of the Nekoosa-Edwards Paper Company, Port Edwards.

The location of the Institute in Appleton is singularly fortunate. It has made possible an affiliation with Lawrence College. This is an institution, now over eighty years old, which has a long tradition of sound scholastic standards, and which in recent years has made extraordinary advances to prominence in the educational world. By being affiliated with Lawrence College, the Institute will have the benefit of its administrative guidance, its equipment and facilities, and its established academic procedures.

Adjacent Paper Mills Make Appleton Favorable Location—Appleton is a strategic location in still another respect, in that within a seven-mile radius of the city, there is nearly every type of paper and pulp manufacture, as well as many of the more prominent lines of paper conversion. It is almost unique in the United States in this respect. It would be impossible to find any similar compact area with such a wide diversity of paper manufacture. In addition, much paper mill machinery and equipment is made in immediate proximity to Appleton, and the manufacturers of this type of material have already begun to supply the Institute with standard equipment. Access to the illustrative material available by reason of these manufacturing plants is already assured to the students in the Institute, and in many of them summer employment will be available, so that students will have opportunity for practical experience and remunerative employment.

There is a third benefit which flows from the location. The Institute will draw upon the experts now employed by the several manufacturing companies in this area. It is one of the fundamental features of the plans for the Institute of Paper Chemistry to have as members of its staff the highly trained men who have the practical experience which has come from years of service in manufacturing enterprises in this region. They will come into the Institute not only as special lecturers upon their individual fields of greatest proficiency, but will also be available for the tutorial guidance of students in the Institute who wish to specialize in their work.

Courses Will Lead to Degrees—The Institute will open at the beginning of the second semester of this academic year, Monday, February 3, 1930. Courses will be organized leading to the degree of master of science. As soon as qualified students are ready for more advanced work, research facilities have been provided so that the degree of doctor of philosophy will be granted.

Dr. Otto Kress has been appointed the technical director of the Institute. His long experience and successful research in problems connected with papermaking, as well as his demonstrated teaching ability, will be at the service of the students. His broad acqaintance and recognized standing assure the graduates of the most favorable opportunities for positions.

A group of individuals interested in the project have provided funds for the establishment and maintenance of a special library. It is planned to have the largest and most completely available library in this field to be found in the country.

Tuition and Entrance Requirements—Tuition is at the rate of $200.00 a year. This includes all laboratory fees. There are a limited number of scholarships available to students of unusual ability. Two fellowships have also been established. Each carries a stipend of $500.00 a year. They will be assigned to students of distinctly exceptional capacity.

The requirements for admission are a bachelor's degree with a major in chemistry and a satisfactory personal interview. In cases where distance or other circumstances make such an interview impracticable, letters of recommendation and other evidences of character, competence, and industry will be accepted.

Inquiries should be addressed, to the Director of the Institute of Paper Chemistry, Appleton, Wisconsin.

Rules for 1930 Safety Contest

The Paper Industry Sixth Annual Safety Contest, Beginning January 1, 1930, Will End June 30, 1930

RULE 1—(a) This contest is open to all members, Paper and Pulp Section, National Safety Council, employing more than 20 employees in one mill, or as hereinafter provided using fourdrinier, cylinder or pulp mill machinery and actually engaged in the manufacture of pulp, paper, container board, strawboard, plasterboard, roofing paper, insulating or wall board.

(b)—Mills solely engaged in paper converting, such as finishing, coating or paper goods manufacturing are not eligible.

(c)—Each company operating a paper converting plant in connection with and in close proximity to a pulp, paper or board mill, as defined in Rule 1 (a), may enter both plants jointly as one eligible mill.

(d)—Each company operating two or more eligible plants may enter its mills jointly as one contestant, or each eligible mill may be entered separately.

RULE 2—(a) Contestants shall be divided into three groups, namely:

Group A—Mills employing 501 or more employees
Group B—Mills employing 201 to 500 employees
Group C—Mills employing 20 to 200 employees

(b)—A mill to remain eligible must operate a minimum of 70 per cent of the calendar working days in the period of the contest.

RULE 3—Contest shall start January 1, 1930, and end June 30, 1930.

RULE 4—The winner of each group shall receive the National Safety Council Trophy and shall be the mill receiving the greatest total number of **points credit** (or the least total number of points charged in the event there are no mills with credits) during the period of the contest, based on percentage reductions of both frequency and severity, as compared with the average contest frequency rate of 25.00 and the average severity rate of .50.

(A) **Frequency**—5 points shall be **credited** for each 1 per cent reduction as compared with the average frequency rate of 25.00. Likewise, 5 points shall be **charged** for each 1 per cent increase.

(B) **Severity**—1 point shall be **credited** for each 1 per cent reduction as compared with the average severity rate of .50. Likewise, 1 point shall be **charged** for each 1 per cent increase.

(Example)—Mill employing 500 men during the contest works 625,000 hours and has 25 lost time personal injuries causing 150 days lost time, thereby producing Acc. Freq. rate of 40.00 and Acc. Sev. rate of .24.

Freq. rate of 40.00—60.00% **above** average (25.00); therefore, at rate of 5 points for each 1%, the **charge** would be 300 points (5x60).

Sev. rate of .24—52% **below** average (.50); therefore, at rate of 1 point for each 1%, the **credit** would be 52.00 points (52x1).

Total points charge—248.00 (300.00—52.00).

RULE 5—In the event that two or more mills in any group have perfect scores (no lost time personal injuries during the contest, which is equal to 600 **points credit**), the winners shall be the mill with the perfect record working the greatest number of man-hours during the contest.

RULE 6—A lost time personal injury shall be any personal injury, resulting is the loss of time, which comes within the scope of Item 40, page 4, and also on the reverse side of the report form. This is interpreted to mean that **all time shall be counted as lost time until the injured employee returns to a regularly established job, which he can perform with normal efficiency.**

RULE 7—All lost time shall be charged to the month in which the personal injury occurred. However, corrections may be made in previous reports, when the corrected report has been duly signed by the individual requesting such change and **countersigned** by an officer of the company.

RULE 8—All contestants shall make monthly reports to the Chicago office of the National Safety Council on forms furnished as per enclosed copy. These reports shall be in accordance with all rules listed and notes on reverse side of report.

RULE 9—Reports must be mailed so they will reach the headquarters office not later than the 15th day of the month following.

RULE 10—Any contestant 30 days or more in arrears with its monthly reports shall automatically be withdrawn from the contest.

RULE 11—Every mill entered in this contest will receive a key number known only to that mill and one member of the headquarters staff, National Safety Council. Monthly ranking of mills will be published on this basis. Final rank numbers will be published with company names at the 19th Annual Safety Congress.

RULE 12—When the winner of each group has been definitely decided, the judges will award by a majority vote to the one of these three, having in their opinion, established the best record based on frequency and severity, man-hours worked, physical conditions and any other contributing factor, the grand prize donated by THE PAPER INDUSTRY of Chicago.

RULE 13—To all mills finishing in positions two and three, in each group, and to those finishing with a perfect record but not receiving the group trophy, the National Safety Council will present a Certificate of Merit.

RULE 14—Final award of all trophies and certificates will be made at the 19th Annual Safety Congress.

RULE 15—The judges of this contest shall be:

E. W. Beck, Safety Director, United States Rubber Co., New York City.

E. F. Blank, Safety Director, Jones and Laughlin Steel Co., Pittsburgh, Pa.

W. H. Cameron, Managing Director, National Safety Council, Chicago.

Edward B. Fritz, Publisher, THE PAPER INDUSTRY of Chicago.

G. E. Sanford, General Electric Co., Schenectady, N. Y.

RULE 16—All entries in this contest must be made on the "Official Registration Form" and received **ON** or **BEFORE** February 1, 1930.

Safety Meetings

Two important safety conferences are scheduled for the month of January. January 14 to 16, the Third Annual All-Ohio Safety Congress will meet at Columbus, Ohio. Thos. P. Kearns, superintendent Division of Safety and Hygiene, Industrial Commission of Ohio, is secretary.

The second annual Maine Safety Conference will be held at Augusta, Maine, January 22nd. Secretary of the congress is Charles O. Beals, Commissioner, Department of Labor and Industry.

Paper Salesmen Listen to Worthwhile Talks

Trade Conditions Discussed and the Industry Reviewed with Observations on the Influence of New Machinery on Production

A VARIETY of subjects was discussed at the last meeting for the year 1929 of the New York division of the Salesmen's Association of the Paper Industry, the headquarters of which are at 18 East Forty-first Street, Douglas A. Crocker, secretary. Emmett H. Naylor, secretary of the Writing Paper Manufacturers' Association, was the principal speaker and he gave a most interesting review and forecast of business, as indicated by new machines and their records during the past ten years, the keynote of which was that if business was conducted with the expectation of a recession in the early part of the year and a return to normal production in the latter part of the year, there was no reason why it should not be done on a profitable basis.

That skepticism prevails concerning the future of cornstalks as raw material for pulp and paper was evident in statements made by Mr. Naylor and others. Progress in the utilization of waste products of the farm, such as cornstalks, appears to go forward in recurrent cycles, for Mr. Naylor quoted a veteran papermaker on the three cornstalk cycles of 1889, 1909 and 1929, respectively. It is not unlikely that Dr. Viggo Drewsen, chief consulting chemist of the West Virginia Pulp & Paper Company, holds the solution of the problem, since he has more than once declared that nothing will ever be accomplished toward the profitable utilization of waste cornstalks, or similar crop materials, until a satisfactory system has been invented for the recovery of chemicals used in pulping them.

The Newsprint Boom in Alaska

The appearance in a recent issue of the New York Herald Tribune of an illustrated article announcing the award of contracts to two large newsprint paper companies for the exploitation of southeastern Alaska as a newsprint paper manufacturing center came in for some comment. The secretary of the News Print Service Bureau, who was present, said the article might have been printed ten years ago, for all it applied to present day conditions; and, as to current gossip concerning a threatened famine in pulpwood, he declared that there never would be a continental shortage of pulpwood in North America.

Rag Paper Research Laboratory

One of the most interesting announcements made at the meeting related to the establishment by the fine paper manufacturers of a research laboratory, intended to aid papermakers who use rags in the process to make better papers, as well as in standardizing individual mill laboratory procedure. Commenting on efforts for standards, Mr. Naylor emphasized the fact that the public is not interested in many of the qualities of paper which the manufacturer considers of major importance. The consumer of fine papers wants to know if the paper looks well, has a good surface and for certain purposes is permanent. In Mr. Naylor's opinion much manufacturing and merchandising effort is wasted in trying to make the public conscious of paper qualities for which it cares nothing and which would do it no good to know. In describing the work of the research laboratory he stated that it was for the purpose of helping the mills to make better paper. The work of the laboratory would fall into three major classffications: (1) Research work on papermaking fibers; (2) standardization of individual mill laboratory procedure; (3) special research problems for individual mills.

The meeting was held in the grill room of the Fraternity Clubs Building, Madison Avenue and Thirty-ninth Street, New York, following the usual luncheon, on Monday, December 16, 1929.

"Changes in Business"

After the customary weekly reports on the condition of trade had been made by the representatives of paper manufacturers in attendance, Mr. Naylor was introduced to give the main talk.

Mr. Naylor discussed "changes in business" as related to the fine paper industry, which he said was just as much subject to change as any other business. As with automobiles, radios, or the clothing trades, the paper mill that allows itself or its product to become obsolete was "on the way out."

Progress of Writing Paper Industry

After stating that the paper industry differs greatly today from what it was ten years ago, Mr. Naylor gave an interesting review of progress in the writing paper industry as influenced by the scrapping of old papermaking machines. The Writing Paper Manufacturers' Association made its first annual report on new papermaking machines in the United States in 1920, a year in which sixty-three new machines went into operation. In the following year only fifty-three were reported, and in 1922 there were fewer still, though the total for the ten-year period from 1920 to 1929 amounted to 348.

Machines Used by Entire Industry

The number of machines in use by the entire industry in 1919 was 1,545, and, as in the ten intervening years, 180 machines had been added, this gave a total of 1,725 machines at the end of 1929. It was impossible to add old and new machines for a total, since most of the new machines were to displace old ones and the production of each new machine amounted to three or four times that of an old one. Many old machines were still kept going, which accounted for some overproduction, but in a changing industry this would soon adjust itself, he said.

Overproduction and Its Desirability

Mr. Naylor gave it as his opinion that overproduction within limits was always desirable for a growing industry; and that in order to meet changing conditions and increasing uses, the paper industry needed some over-capacity.

The total productive capacity of the industry in 1919 was 25 per cent over actual production, though he said that if he had been asked, he would have put the figure at 40 per cent. During the ten years between 1919 and 1929, new machines had been put in operation to the number of 348, and 168 machines had been scrapped, either because they had become out-of-date, or were worn out.

While the total productive capacity of the industry in 1919 was 25 per cent in excess of actual production, there had been in the last ten years an increase of 78 per cent in capacity, though the figures for capacity over actual production remained only 25 per cent. It will be seen that while the tonnage was about twice as much, overproduction had been no greater. The growth in production has been chiefly in the coarser papers, for Mr. Naylor was speaking for the entire industry at this point.

Migration of Newsprint to Canada

It was noted that with the development of the newsprint industry, conditions had undergone a great change. In lighter vein, Mr. Naylor said that this branch of the industry "like the brewer of old has had to cater to a national thirst at a low price, which may account for its migration to Canada where a thirst can be more easily assuaged."

Destruction of Forests for Newspapers

He quoted a statement attributed to Dr. Hugh P. Baker that one newspaper, the New York Times, consumed in one Sunday edition twenty-five acres of spruce woodland, and observed that when this was multiplied by the number of weeks in a year, and that in turn by all the Sunday papers in the land, then by all the daily papers, it could be seen why this branch of the industry must have wings to fly from stump to tree.

In discussing the shift in the manufacture of newsprint from the United States to Canada, Mr. Naylor emphasized the need of this industry for ample supplies of pulpwood, which made the building of mills in Canada a natural development. He commented on the fact that the paper in-

dustry in the United States is not a really heavy consumer of wood, using not more than 5 or 6 per cent of the total wood cut in the United States for all purposes. It should not be overlooked, he added, that papermakers carry on some of the country's greatest and most intelligent reforestation, and that their products made education and the present standards of civilization possible.

Changes in the Fine Paper Industry

Speaking more particularly of the changes that were taking place in the fine paper industry, Mr. Naylor said:

"But as newsprint has shifted to Canada so many of their machines here have shifted to other grades. This in a degree accounts for the fact that whereas fifteen years ago the production in the writing paper industry was 80 per cent rag content papers and 20 per cent sulphite bonds, today the percentage is just reversed, with 80 per cent sulphite bonds and 20 per cent rag content. This does not mean any large loss in tonnage to the rag content mills but a great change in this division of the industry. Two years ago these twenty-eight rag content mills realized they must let their place in the sun be more appreciated and so began a most effective national advertising effort which has held a tonnage that was decreasing and turned it in the other direction, with an increase over the last year in these grades of 10 per cent. The campaign is in no way antagonistic to sulphite bonds or ledgers, for there is no occasion for a Reach-for-a-Lucky-instead-of-a-Sweet attitude; both grades have their place, and any effort of this kind should consist of an endeavor to bring about a greater understanding of and appreciation of standard quality papers."

The speaker called attention to what he termed "the three cornstalk cycles." He told of a talk he had had with a veteran papermaker who in 1889 had an opportunity to go out to Kansas and make paper from waste cornstalks. Cornstalks at that time were advertised to solve the problem of rag and wood shortage. There was another boom of a similar kind in 1909, and again in 1929, so that the cycles came about at twenty-year intervals.

New Research Laboratory Founded

Mr. Naylor announced that the rag paper manufacturers had organized their own research laboratory to help the mills make better papers and to standardize individual mill laboratory procedure through meetings of chemists. Three men were already at work on the project under the direction of Dr. Jessie E. Minor, who is a recognized expert in cellulose technology. It was the consensus of those present, voiced by Mr. Kellogg, that this was so obviously a move in the right direction that too much credit could not be given to the men who took the lead in the movement.

Forecasting Business Conditions

Discussing the business outlook for 1930 from the fine paper manufacturers' standpoint he said that in general a recession in trade was under way, though it had not been felt to any extent in the finer grades of writing paper. The business depression would likely affect luxury goods and be felt chiefly in the automobile and its related industries. While there might be a decline in business and profits during the early part of the year, a depression of the severity that prevailed in 1920 and 1921 was considered highly improbable. He said it was expected that by next spring or summer the trend of business would again be upward and that by next fall conditions should again be quite satisfactory.

Expected Influence of Trade Depression

The interesting observation was made by Mr. Naylor that while the total volume of sales for the year 1930 might be the same as that reported for 1929, the profits would be smaller. This would indicate that the recession in the first part of 1930 might neutralize the normal customary growth in American business from year to year. Orders for fine papers would perhaps be sought after more intensively in 1930 as a consequence of additional machine capacity. As for 1929, Mr. Naylor reported that the writing paper industry was completing its best peace-time year, and was in better financial shape than it had ever been.

Waxed Paper Men Meet in New York

Plan of Group Activities by Classification within the Industry Discussed in Two-Day Session

THE American Waxed Paper Association, with offices at 342 Madison Avenue, New York, in charge of Paul S. Hanway, manager, held a two-day session at the Hotel Astor, New York, on Thursday and Friday, December 12 and 13, which was attended by forty representatives of the industry.

It was a novelty for the representative of THE PAPER INDUSTRY to attend a meeting of paper manufacturers and paper converters grouped in divisions bearing such titles as Household Rolls, Bread Wrappers, Confectionery, Glassine, etc.; he saw many familiar faces there and talked with men who are seldom absent from the annual meetings of the American Paper and Pulp Association.

W. L. Carter Conducts the Meeting

A general luncheon meeting on Thursday was conducted by W. L. Carter, of the Nashua Gummed & Coated Paper Company, Nashua, N. H. This meeting, as stated by Mr. Carter, in introducing the Hon. Joseph E. Davies as the principal speaker, was the largest gathering that the American Waxed Paper Association had ever held and it augured well for operations next year, when the work of the association under the Fair Practice Code would be better known.

Following an allusion to the helpful relations which had been established with the Federal Trade Commission in recent months, which contrasted most agreeably with the former attitude of the commission when it was viewed by the trade more as a police commission than a federal commission, he called on the Hon. Joseph E. Davies, former chairman of the Federal Trade Commission, and now senior member of the firm of Davies, Jones, Beebe & Busick, counsel for the association, to address the gathering.

Praise for the Association by Mr. Davies

Mr. Davies, who received a rousing welcome from the members, said he was not prepared to make a formal speech. He desired, however, to congratulate the members on the efficient way in which their affairs were being handled by Mr. Hanway, who had displayed, in his management of the association, executive capacity, diplomacy and skill of a high order. He added that the waxed paper industry was to be congratulated on having an association which was rendering such excellent service to its members, as well as to the industry as a whole; for it took a degree of high visualization to maintain an association within an industry. When a trade association was needed, it was needed vitally, seeing that an emergency might arise when the industry was in jeopardy because of cut-throat competition and unfair practices. Functioning as it does for group interests rather than individuals, the results of trade association activities were not usually direct or rapid but required time for development.

Advantages of Getting Together

The advantages of getting together in concerted work as an association was illustrated by Mr. Davies in an anecdote of the father who brought his sons before him one day to impress on them the advantages of holding together. Taking three sticks he showed how easy it was to break them separately and that when tied together they could not be broken.

Mr. Davies declared that trade associations have a peculiar function in the United States. In Germany they have kartels, in France comptoirs and in England "rings." In 1892, Senator Sherman of Ohio enunciated a principle now embodied in the Sherman law which was directed against monopolistic effort, but competition if carried to an extreme was quite as destructive as any monopoly. Following the enactment of the Sherman law, many drives were made against the evils of mergers, since the object of the Sherman law was to maintain free competition.

Co-operation with Industry

Mr. Davies reviewed the history of the Federal Trade Commission Act and the Clayton Law. The Interstate Commerce Commission had for a number of years given commission

rulings as to the legality of certain acts and the Federal Trade Commission was conceived to give information to industries. During his term of office as Secretary of Commerce, Mr. Hoover had invited trade association executives to meet with him in Washington and there was soon a general recognition of the fact that trade associations were performing a very creditable, lawful and valuable work, but Mr. Davies pointed out that despite this co-operation, there would yet be prosecutions under the Sherman law for violations of that act.

Value of Trade Associations

Speaking more directly to the gathering before him, Mr. Davies told them that they were rendering a distinct service to the industry, as well as to the community as a whole, by providing for the correction of trade evils. While trade association activities did not require any defense from him he had seen many trade associations come and go; it was a distinct element of strength in any industry to have an association. Progress was a good deal like a spiral constantly ascending, but with one strand not very far away from another.

In closing, Mr. Davies congratulated the association on going ahead so splendidly and courageously in the face of many difficulties.

General Manager Neal Addresses the Meeting

Chairman Carter thanked Mr. Davies for his informing address and, in reference to one of the guests present, said that while the association was composed of paper converters, as consumers of paper the members were greatly interested in the American Paper and Pulp Association. He mentioned the action taken by the A. P. & P. A. at the last annual meeting in creating a new office of general manager, which had been filled by the appointment of Jesse H. Neal, and whom he would now ask to address the meeting.

Mr. Neal gave some impressions of his contacts with the pulp and paper industry since taking over his new post. He was impressed with the lack of prestige and public recognition that belongs to the paper industry as the seventh industry in the nation. In discussing the subject with one of the executives of his association, he had been led to believe that this attitude arose from the freedom with which paper was thrown away. "You buy a big wad of newsprint paper and throw it away; the same with packages of food, you do not buy the package, you buy its contents. Then there is the garbage that is sent out of an office building daily; it consists largely of paper." He gave instances of a similar character to point the moral that the public had begun to regard paper as a cheap commodity to be thrown away.

Mr. Neal said he was glad to learn that the waxed paper association had a code of business ethics or practice and was adhering to it; for a good sport always played the game according to rules. The man who does not is ostracized, loses caste. He mentioned that he had known Theodore Roosevelt quite well and had learned from him that business was a game in which success comes to the man who hits the line hard and plays it nobly.

The chairman then called on W. B. Powell, of the Appleford Paper Products Company, Ltd., Hamilton, Ont., who sang songs and told humorous stories to the evident delight of his audience.

Position of the American Waxed Paper Association

As the present meeting had been called to determine the advisability of group activities by classification within the industry, such as are touched upon in the foregoing report, it is evident that the waxed paper industry is becoming more firmly organized in its activities for stabilized conditions. The plan of dividing the association into groups representative of the manufacturers of specialties of various kinds, in conjunction with the new trade practice rules, points to a progressive activity of considerable merit, and it is evident that much good has already been accomplished. A foundation has been made for a progressive development and strengthening of the industry which will be of great value, providing the program is supported by manufacturers for a sufficient length of time in order to determine what weaknesses may develop and need correction, or any other changes that may be necessary to improve it.

It is apparent that the waxed paper manufacturers can get together and support progressive activities along constructive lines, for nearly 75 per cent of the manufacturers, representing 85 per cent of the total tonnage, are co-operating with the American Waxed Paper Association.

Lift-Truck Manufacturers Merge

A recent development of definite interest and importance to the materials handling equipment field is the linking together, in ownership and management, Barrett-Cravens Company with Walker Vehicle Company, Chicago, and Automatic Transportation Company, Inc., Buffalo.

Walker Vehicle Company (which is an Insull Company being a subsidiary of Commonwealth Edison Company) has purchased the capital stock of Barrett-Cravens Company, manufacturer of lift-trucks, lift-truck platforms, portable elevators and structural steel storage racks.

The Automatic Company is the pioneer manufacturer of electric industrial trucks and tractors, while Walker Vehicle Company is one of the oldest motor truck manufacturers, having been in business since 1903; manufacturing a full line of electric trucks for street use.

There will be no change in the name or personnel of the three companies.

Leeds & Northrup Enlarge Plant

To celebrate an addition to its plant, which in the last year has doubled in size, and to welcome new members of its organization, which during the same period has grown from 750 to 1,150, employees of the Leeds & Northrup Company, Philadelphia, Pa., held a minstrel show and dance in the ballroom of the Elks Club on Friday evening, December 13th.

During the evening it was pointed out that the latest addition to the Leeds & Northrup Company plant increased the floor space from about two to over four acres. This is the largest of a series of additions to the original building, which was erected in 1903, shortly after the organization of the company.

The expansion of the company has been progressive and is viewed largely as a reflection of the growing interest shown by industry in precision instruments for the control of industrial processes.

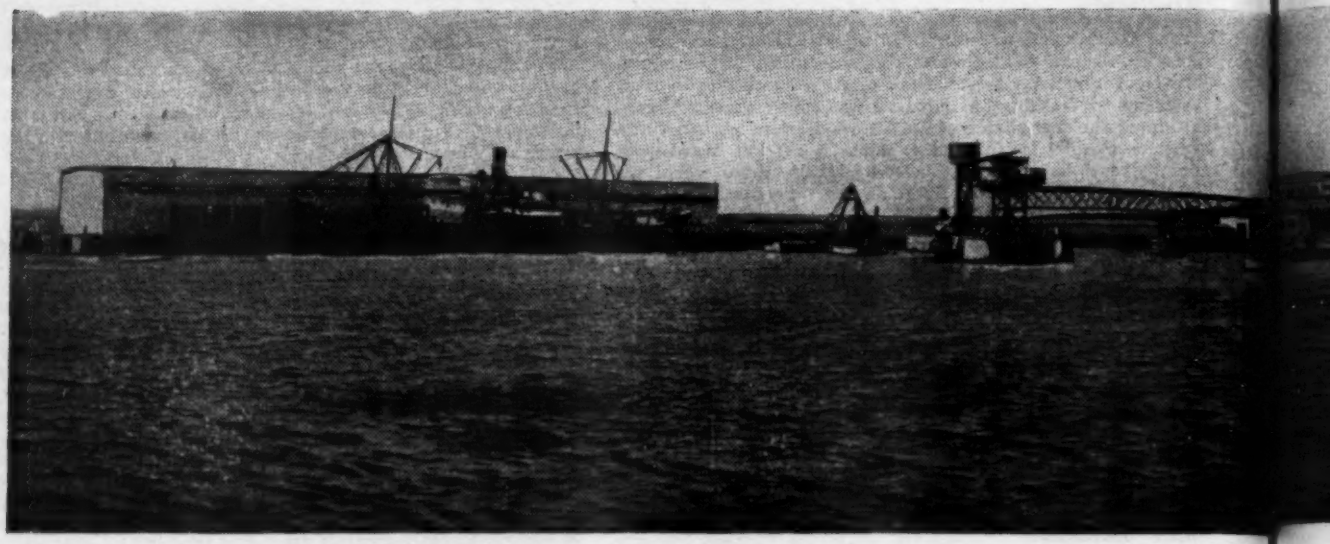
Stuebing Cowan Plant Completed

The Steubing Cowan Co., Cincinnati, Ohio and Holyoke, Mass., which recently became a part of the Yale & Towne Manufacturing Co., Stamford, Conn., has just completed its new plant in Winton Place, Cincinnati, Ohio.

The construction of this new plant is the first of several units which have been necessitated to take care of the wide expanse of the Stuebing Cowan business during the past two years. This first unit, although a one floor plan—makes available three times more production facilities than were formerly offered in its old plant.

Dexter Williams of Watertown, N. Y., has accepted a position in the sales department of the Bird Machine Co., of South Walpole, Mass. Mr. Williams is the son of Mr. and Mrs. Frank M. Williams of Watertown, his father being a well-known consulting chemist and head of the Williams Apparatus Co. which manufactures various kinds of pulp and paper testing machines. Since 1926, Dexter Williams has developed a wide acquaintanceship in the paper industry through his work with the sales and service branches of the Holyoke, Mass., and Carthage, N. Y., divisions of the Paper Makers Chemical Co.

At a special meeting of the stockholders of the American Cyanamid Company held December 17, 1929, Harry L. Derby was elected a member of the board of directors. Mr. Derby is president of the Kalbfleisch Corporation which recently became affiliated with the American Cyanamid Company.



Panorama view of the Mersey Paper Company, Brooklyn, Nova Scotia. This new mill is

Nova Scotia's First Newsprint Mill

Mersey Paper Company Holds Formal Opening of Its New Fifteen Million Dollar Paper Mill at Brooklyn

FOR many years far-sighted and public-spirited Nova Scotians have hoped to see the wood of the Province converted into paper right in the Province, thus giving more work to Nova Scotians, instead of being exported to the United States to be there manufactured into the finished product. This hope has become a reality with the completion of the mill of the Mersey Paper Co., at Brooklyn, N. S., which began making paper on November 27th, last, and was formally inaugurated by Hon. E. N. Rhodes, Premier of Nova Scotia, on December 14th. The completion and starting up of this mill is undoubtedly the most important industrial development which has taken place in Nova Scotia in the last twenty-five or thirty years; and, except for the steel industry at Sydney, it is the largest manufacturing industry of the Province.

The undertaking is due to the initiative of I. W. Killam, a Nova Scotian himself, who had the courage to reach a decision unique in the financial world, for he yet has to make a public offering on the Mersey Paper Co. There is no other case on record of an individual building a $15,000,000 paper mill and bringing it to the stage of production before asking the public to invest in it.

The mill is situated in the village of Brooklyn, at the mouth of the Mersey, the largest river in the Province. It is provided with a splendid harbor on tidewater, about 480 miles from New York, the world's greatest paper market. Actual work on the plant began in June, 1928. Two million bricks and 4,500 tons of structural steel have gone into the construction of its several units. At the same time work was started on the construction of three electric plants along the Mersey river to supply the approximately 20,000 hp. required to run the mill. This undertaking, which is the largest power development in the Province, was carried out by the Provincial Government at a cost of some $5,000,000 and rendered necessary the construction of nearly 20 miles of cross-country highway.

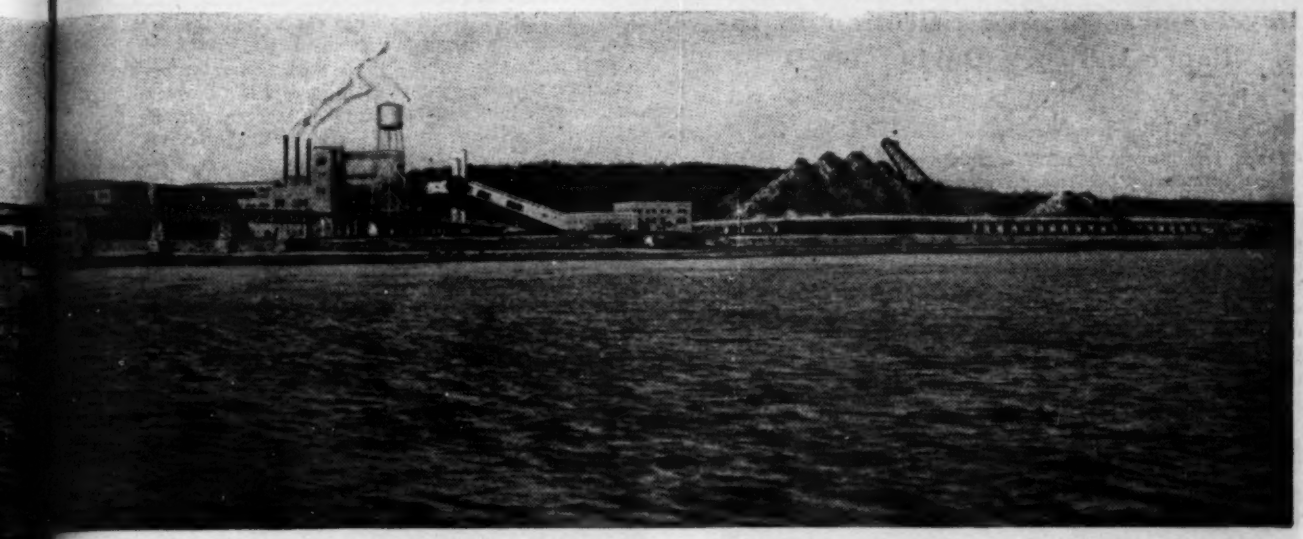
Many Paper Mill and Business Executives Present

Several hundred guests, including representative business men throughout the Maritime Provinces and representatives of the paper industry from all over Canada, among which were not a few of Col. C. H. L. Jones' former associates in the old Spanish river organization, gathered in Halifax in answer to the Mersey company's invitations. A two-section special train, provided by the company, brought them to Brooklyn, where they arrived at 11 a. m. on December 14.

All the guests assembled in the machine shop. At 12:20 p. m., Premier Rhodes officially opened the mill by pressing a gold button which set the machinery in the machine shop in motion. At the same time the doors to the mill slid open, and the guests were shown through the mill by guides. They were shown in turn through the grinder room (housing twelve large magazine grinders), the screen room, the mixing room, the machine room (in which are two 234-inch machines with a daily capacity of 125 tons each), the finishing room, the storage room for rail shipments, the large covered pier where a conveyor carries the rolls to the pierhead storeroom where the paper is stored for ocean shipment, a smaller pier where coal and sulphur are handled, the slasher and wood room, the boiler house, and finally the sulphite mill which houses three digesters.

Company's Own Steamer Is Launched

Following the example set by several other large newsprint producers, the company will ship its paper by water in its own steamer, the "Markland," a twin-screw boat designed by the Montreal naval architects, Lambert and German, who collaborated with president C. H. L. Jones, J. V. Angus, representing the Mersey Paper Co., and the technical staff of the builders, Earle's Shipbuilding and Engineering Co., Hull, England. The vessel, which was launched at about the same time as the official starting up of the mill, is of novel design and has been specially built for the economical and safe stowage and carriage of newsprint rolls. To meet the severe weather she is likely to experience, special precautions have been made against damage by frost, and the holds are specially coiled with special steel sparring faced with wood on all surfaces likely to come in contact with the paper. At the ends of the vessel special steel construction has been made to give vertical and horizontal surfaces for easy stowage and carriage of paper. Electric lighting is fitted throughout. Installed with triple-expansion engines of 2,000 i.h.p., there are three boilers fitted for burning oil on the Wallsend-Howden system or coal with Howden's forced draught system. Her five holds can carry 3,805 tons of newsprint.



situated at the mouth of the Mersey River on tidewater, about 430 miles from New York

After the visit through the mill, the guests were entertained at a camp luncheon at which none but Nova Scotia products were served. This was followed by the speeches of the day. Col. C. H. L. Jones, president of the company, opened this phase of the proceedings by welcoming the assembled guests and referring to the many factors involved in the construction of the mill. He modestly disclaimed that any greater share of credit was due him than to any of the others who had played a part in the undertaking, saying that the achievement was essentially the result of wonderful team play, and he expressed the gratitude of the company to all the men and all the companies, to the government, to the county officials, to the municipal officials, to the transportation companies and to the newspapers for the combined effort and help extended in building the mill. He also read the following message from Mr. Killam, who was unable to attend the celebration:

Mr. Killam's Message

"I am indeed disappointed that the injury to my eye, while of a temporary character, has made it impossible to be with you all at the formal opening of The Mersey Mill and Power Plants. This stage of the development has been, on the whole, satisfactorily accomplished. There have been some difficulties and some disappointments, but there is ground for real satisfaction in that this large Nova Scotian industry is now on an operating basis. It could not have been thus successfully accomplished had it not been for a cordial spirit of confidence and co-operation on the part of the Prime Minister and his colleagues. Will you please join my appreciation with yours in expressing your feeling to the Prime Minister, the Dominion and Provincial Ministers and all those officials and others who have so expedited our efforts to bring the undertaking to its present operating position?

"It is thought premature to make any announcement regarding enlargement of the mill other than to say that our construction expenditures have involved a large amount of money preliminary to the third unit and that the same applies to the development of the hydroelectric power. Therefore, it is manifestly in the interest of the undertaking as a whole that a third unit be installed with reasonable expedition as soon as conditions warrant.

"In conclusion, permit me not only to congratulate you and your organization, but to express to you and them my very sincere appreciation and thanks, not only for what you all have done, but for the very enthusiastic and cheerful spirit that has prevailed throughout."

Premier Rhodes Presented with Plaque

Col. Jones, at the conclusion of his address, presented to Premier Rhodes a souvenir of the occasion in the form of a gold plaque into which the golden button, which the Premier had pressed to start the machinery, had been set.

Speeches were also made by Premier Rhodes, William Duff, M. P., Hon. W. L. Hall, attorney general for the Province, J. J. Kinley, M. P., representing the opposition, Hon. J. Fred Fraser, Chairman of the Nova Scotia Power Commission, Mayor D. W. Mackay, member for Liverpool, W. G. Ernst, M. P., and Francis St. Pierre, personal representative of Mr. Killam. All voiced their satisfaction at the realization of the long-cherished dream of seeing the raw materials of the Province worked up into finished product in Nova Scotia, and paid high tributes to those who were responsible for this great achievement.

Nova Scotia Had Canada's First Newspaper

It was Nova Scotia that gave Canada its first newspaper, the "Halifax Gazette" which appeared in 1752, and which gave the world its first wood pulp paper, made by Charles Fenerty in 1839. It was therefore quite befitting of the occasion that it should acquire a new distinction by putting out the first complete newspaper entirely made in a paper mill. There had been set up in the mill a complete newspaper plant equipped with press, linotype and photo-engraving departments, in charge of E. H. Dennis of the "Halifax Herald." An illustrated 48-page edition of the "Mersey Times," containing a complete description of the new mill as well as of the opening ceremony, prepared and printed right in the mill, was presented to the guests as they filed out of the luncheon hall.

A fleet of motor cars transported them to Big Falls, the site of one of the three hydroelectric plants constructed by the Nova Scotia Power Commission on the Mersey river to supply the electric power requirements of the mill. Hon. W. L. Hall unveiled a tablet commemorating the official opening, and in the course of a few remarks he drew attention to the fact that the Mersey river power development is the largest single-control hydroelectric installation in Canada. The entire development comprises a plant at Lake Rossignol, where the storage dam is also located, a second plant about a mile downstream at Little Lake Falls, and a third at Big Falls where control of the three plants is centralized, so that regulation of stream flow at the storage dam and the starting up or shutting down of any unit in any of the plants is effected from the control panel at Big Falls. After the unveiling of the tablet the guests followed Mr. Hall into the power house, where he threw in the control switch that started up one of the generators.

The proceedings were brought to a close by a visit to the dining room of the construction camp where refreshments were served and short addresses given.

Development of Electrification in the Paper Industry During 1929

By S. A. STAEGE

Paper Mill Engineer, Westinghouse Electric & Mfg. Co.

THE trend towards more complete electrification in the paper industry becomes more pronounced every year and 1929 has been no exception.

The passing year has seen the complete development and perfecting of the Westinghouse carbon pile type section speed regulator for paper machine section control; has witnessed the successful culmination of the multiple motor winder drive development with generator braking and automatic tension regulation; and has seen a revolutionary development in cylinder paper machine drive, wherein individual motors are provided for each cylinder mold and primary press in addition to all of the main sections of the machine,

Fig. 1—Individual motor drive on the wet end of a cylinder machine

and with the control for these small motors at the wet end, so simply yet so perfectly adapted to the requirements that all undesired tension is removed from the felt, thereby contributing greatly to the life of the felt and improvement on the formation of the sheet. This type of installation is illustrated in the case of the cylinder machine in the plant of the National Paper Products Company at Port Townsend, Wash., where the Westinghouse sectional drive is the first installation where individual motors have been applied to all of the cylinder molds and primary and baby presses in addition to all of the main sections of the machine. (See Fig. 1.)

The carbon pile type section speed regulator (Figures 2 and 3) is a notable contribution, as it is many times faster

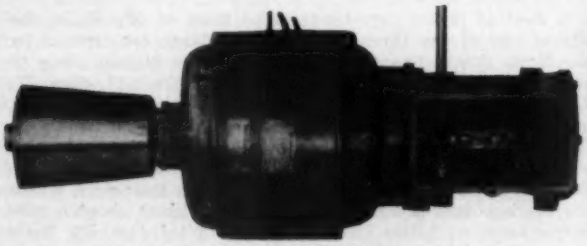


Fig. 2—Section speed differential

in operation than any previous section speed regulator for paper machines, has powerful anti-hunting features assuring absolute stability and at the same time reduces maintenance and attention to a minimum, placing the sectional paper machine drive on a higher plane of performance and reliability than it has ever occupied before. In principle, this carbon pile type regulator is similar to that of the now well-known Westinghouse carbon pile type voltage regulator which on account of its simplicity has solved the voltage regulator problem in paper mills.

The multiple motor winder drive with generator braking and automatic tension regulation (Figure 4) is a development upon which Westinghouse engineers have been working for

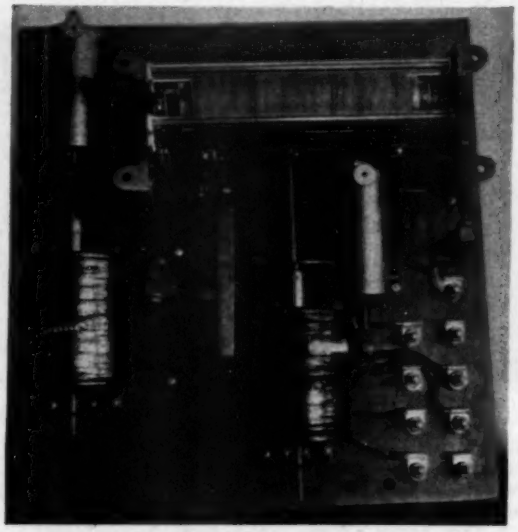


Fig. 3—Carbon pile section speed regulator

a number of years. St. Lawrence Paper Mills and Crocker Burbank & Company are typical examples of winder drives for news and book paper respectively. It is another illustration of how the electrical manufacturer can be of great service to the paper industry. In this system, the correct relative torques of the several winder drums are maintained automatically, a motor being coupled to each of the drums, no belts being necessary and no adjustments required on the part of the operators. A braking generator takes the place of the usual friction on the unwinding spool, and through the automatic regulator the tension of the sheet is maintained uniform and at any desired value regardless of the diameter of the roll on the unwinding stand or on the winder drum.

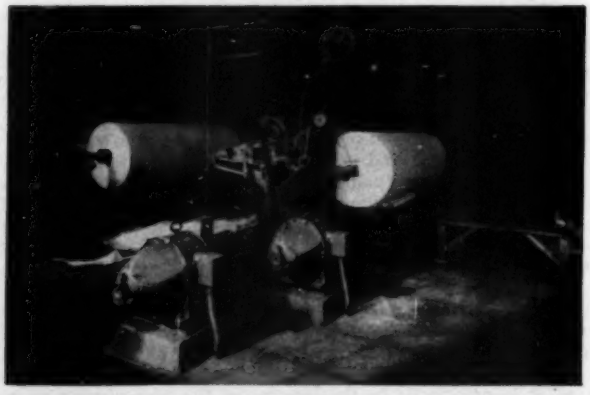


Fig. 4—Two motor winder drive

Because of the perfection and uniformity of control, rolls can be wound up faster and with greater uniformity than is otherwise possible.

The braking generator principle has also been applied to the unwinding stand in the case of high speed supercalenders and is adaptable to all similar operations.

The above are a few of the most outstanding developments of the year in the paper industry.

Saving Steam by Use of Heat Exchangers

By D. K. DEAN
Development Engineer, Foster Wheeler Corporation

MANY industrial plants use steam for process work and in practically every instance large savings are possible by the judicious use of heat exchangers. The means of recovering heat in processing is through conventional shell and tube type heat exchangers. This simple method is not applicable to all processes, however, because of solids in suspension which would quickly pick up the ordinary heat exchanger.

Certain types of paper mills form excellent examples of industrial plants having large quantities of high temperature liquids, the heat of which is wasted through inability to pass the liquids through heat exchangers. The Foster Wheeler Corporation recently developed a reclamation system which does not involve running pulp suspended in water through a tubular heat exchanger.

In those mills in which book or newspaper stock is deinked, washed and recovered to make new paper, large quantities of fibrous material are heated and digested in water at temperatures ranging from 170 deg. Fahr. to 200 deg. Fahr. The processes used are generally continuous; a steady feed of fresh water and pulp is supplied to replace recovered pulp which is carried to the next process. Customarily, it is not desirable to maintain high temperatures in the pulp after it leaves the digesters. Therefore, if the heat can be transferred from the repulped material to the raw process feed, large fuel savings can be realized.

Many attempts have been made to effect the desired heat transfer in tubular heat exchangers, but all have failed owing to plugging soon after going into service.

The newly developed method, which has been in successful operation for nearly a year, employs the principle of flash evaporation. Water and pure vapor only are used in the heat transfer apparatus and the heat exchange takes place in a direct contact heater so that there are no tubes to be kept clean or to leak.

Fig. 1 illustrates a simple arrangement of this heat exchange system. A flash chamber is connected to a direct contact heater equipped with a steam-jet air pump. The repulped material enters the flash chamber at the top and is spread out automatically, providing sufficient free area for the necessary vaporization. The steam-jet air pump attached to the direct contact heater maintains a vacuum within the system. Steam from the hot pulp-filled liquid is flashed off and passes to the heater.

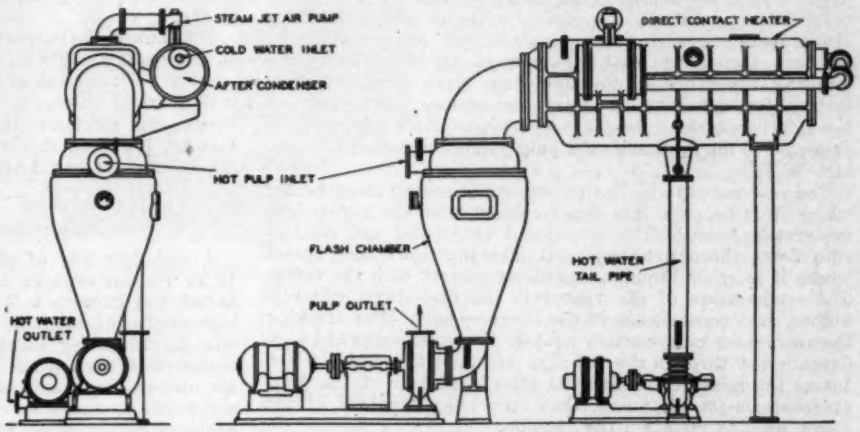


Fig. 1—Diagram showing a single stage heat exchanger system for paper mills

The raw water fed to the process passes first through the after-condenser of the steam-jet air pump, absorbing the heat of the steam used to maintain the vacuum. The feed water is then sprayed into the heater where it comes in direct contact with the steam and absorbs the latent heat of the steam flashed from the pulp. It is thus possible to heat the feed water to a temperature within a few degrees of the temperature corresponding to the vacuum in the heater. The mixture of raw water and condensate flows down the tail pipe of the heater to the suction of the raw water pump which delivers it to the process. The pulp within the evaporator, after being cooled to the temperature corresponding to the vacuum by generation of flash steam, flows into the suction of the pulp pump. This pump delivers the pulp to the next step in the process.

In this system, if the amount of raw water feed is equal to the amount of pulp flowing through the process, approximately 40 per cent of the fuel necessary to raise the temperature of the pulp from an inlet temperature of 50 deg. Fahr. to a desired temperature of 200 deg. Fahr. would be conserved.

Although the single-stage system described above offers large economies, it may be seen that increased savings may be accomplished by the adoption of two or more stages. The increased number of stages has the same effect as a counter-

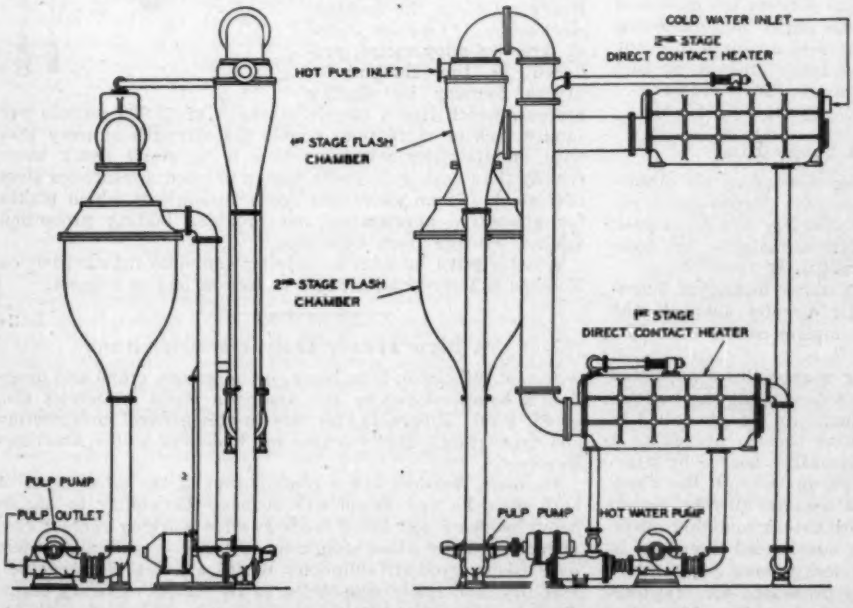


Fig. 2—Arrangement of the two-stage heat exchange system for paper mills. This system is in effect two single stage systems operating in series, so that there is produced a counter-current flow of raw water and pulp. The effect of the two stages in series is to save several per cent in fuel. This unit is installed in a New England paper mill which reports a 42% steam saving for the entire plant

flow arrangement in the ordinary heat exchanger apparatus. Fig. 2 shows the arrangement of a two-stage system which has been installed in a New England paper mill where old papers are repulped to make new material.

In the two-stage system the hot repulped fiber enters the first-stage flash chamber at the top. A single-stage steam-jet air pump maintains a moderate vacuum in this flash chamber and the first stage heater with which it is connected. The steam-jet air pump is equipped with a surface-after condenser. Steam is flashed from the fiber and water mixture in the flash chamber and passes to the heater while the repulped material itself drains through a loop-seal to the inlet of the second-stage flash chamber where a higher vacuum is maintained. The second stage is equipped with a direct contact heater and a steam-jet air pump similar to the first stage except that the steam-jet air pump discharges into the vapor line of the first-stage flash chamber, eliminating the necessity of an after-condenser. The repulped mass, after flashing in the second-stage flash chamber, is delivered to the system by the pulp pump for further processing.

The raw water to be heated enters the second-stage heater where it is brought into direct contact with the vapors and moderately heated. The mixture of raw water and condensate flows through a loop seal into the first-stage heater where it is again brought into direct contact with the vapor. The temperature of the vapors in the first-stage heater is higher, as a consequence of the lower vacuum, thus allowing the raw water to be further heated. The feed water and condensate flow through the tail pipe into the water pump which forces the mixture through the after condenser of the first-stage steam-jet air pump, thus recovering the heat of the steam used to maintain the vacuum.

The entire system is simple in its operation and construction. The fact that there are no moving parts in the heat exchanger apparatus eliminates the possibility of shutdowns caused by clogging with fibers. Operating costs are, therefore, kept at a minimum.

A comparison of the operating records at this plant before and after this two-stage system was installed shows considerable saving by the heat recovery apparatus. On June 12, 1929, the through-put of the mill was 15 per cent more than on the same date of the previous year. The steam consumption, however, with increased through-put was only 210,000 lbs. a day this year, as compared with 315,000 lbs. for the same date of last year. Taking into account the increased through-put, the steam saving for the entire mill resulting from the use of the heat exchanger system amounts to about 42 per cent. In consequence of the large amount of fuel saved by this system, a duplicate unit has been ordered.

Eliminates Smoke and Saves Fuel

Through the Supply and Equipment Section of the American Paper and Pulp Association, we have learned of a recently proven device which eliminates smoke and saves fuel, known as the Luksmo Carburetor, manufactured by Luks Smoke Carburetor, Inc., 40 White Street, New York City.

The Luksmo Carburetor is an effective means of introducing a supply of heated fresh air directly amongst the gases above the fuel bed to insure complete combustion. The method is as follows:

A special bridge is built enclosing a specially constructed hot air duct, which is controlled by a damper at the bottom. In the case of water tube boilers ducts are also installed in the side walls. These cast iron ducts become heated to a high temperature. Air already considerably heated by passing underneath the firebars, is drawn up through the ducts by the natural or induced draft and becomes further heated to a high degree through contact with the surrounding parts. This hot air emerges through the constricted openings in the tops of the ducts as a more or less intense blast. Over the firedoors are fitted two or more preheated air injectors. These injectors, which have flattened, fan shaped nozzles, project violent streams of preheated air directly into the mass of "green" gases arising from the fire, causing an intense turbulence at this point and at the same time sweeping all the gases backward across the furnace where they further mingle with the hot blasts of air from the back and side ducts.

This operation thoroughly mixes preheated air with the green gases bringing about complete combustion. The resulting heat is, naturally, extremely high as compared with that from a smoky fire.

Both supplies of preheated air are readily controllable by means in the one case of the damper at the base of the bridge supply and, in the other by means of the variable chokes which form part of the injectors over the firedoor. This control requires the minimum effort on the part of the stoker, who quickly acquires the art of keeping the CO_2 content of the flue gases at the right point without making smoke.

The Lukso Carburetor is the invention of Francis Luks, an Australian combustion engineer, who brought his device to New York several months ago after it is said to have met with marked success in plants and factories in Australia, France and England. Here he formed the Luks Smoke Carburetor, Inc., and it has been devoting itself to the marine development of the device.

New Line of Electric Hoists

A complete line of electric hoists in sizes ranging from ⅛ to 7½-ton capacity is announced by the Hoist & Crane Division of Robbins & Myers, Inc., Springfield, Ohio.

A number of outstanding features are incorporated in these new hoists, among which are: (1) a radical improvement in design with a resultant saving of both weight and space in all dimensions, headroom included. (2) cast steel trolley adjustable to nine sizes of I-Beams. (3) a safety constructed enclosed bottom block which retains the rope on the sheaves and shrouds all parts so as to guide itself easily into the rope flare when swinging. (4) gearing of alloy steel, heat treated to rigid specifications which allow for the maximum strain of constantly reversing tooth loads at top motor speed. (5) Hyatt roller bearings specified by and applied with the approval of the Hyatt Roller Bearing Co., in the hoisting mechanism. (6) a main frame of Aremite alloy metal, produced in the Robbins & Myers foundry by electric process, which has a tensile strength of 35,000 pounds per square inch or more than double the strength of gray iron with an elasticity which enables it to stand shock more readily than cast iron, and a better finished appearance than cast steel. (7) an aluminum finish throughout which makes for attractive appearance and provides lasting protection against damage from exposure.

A descriptive bulletin containing complete information on Robbins & Myers Electric Hoists may be had on request.

A New Heavy Duty Derrick Crane

A new full circle, long boom, broad gauge, crane and dragline is being offered by the American Hoist & Derrick Co., of St. Paul, Minnesota, for use in the general construction and excavating. This machine will be known as the American Revolver.

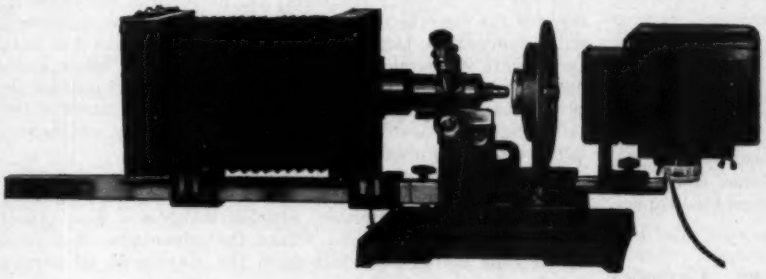
Its main features are a combination of the advantages of both derricks and locomotive cranes—the ability to handle heavy working and lifted loads at wide working radius; ease of movement by wheel mounting on track, or skid and rollers over rough ground; simplicity of its all steel construction; stability, and ready adaptation to all classes of heavy crane, derrick, or dragline work.

The American Revolver is available in three sizes with booms 75, 85, or 100 ft. long and turntable diameters of either 14 or 20 ft. Either steam, electric, diesel, or gasoline power can be furnished.

The Paper-Maker's Microscope

One of the most recent and valuable contributions to scientific control in the manufacture of paper, is the instrument known as the Paper-Maker's Microscope, developed by the Bausch & Lomb Optical Company, Rochester, N. Y., internationally known manufacturers of optical products.

The Paper-Maker's Microscope, in common with the many well-known optical instruments of utmost mechanical precision for which Bausch & Lomb have been noted for over seventy-five years, has been developed to fill a long-felt need in research laboratory work. In this instance the urgent need for scientific control of papermaking has resulted in the development of this special type of microscope and photomicrographic apparatus by the company's scientific and research bureaus.



B & L Paper-Maker's Microscope and Photomicrographic Camera

In rawstock, covers, bonds, writings, or any other uncoated papers, this instrument shows up the surface texture for examination and photographing, that future comparisons and permanent records might be made. The size, length, position and arrangement of the fibers tell much about the strength, smoothness, printing qualities, folding abilities, and other requirements of the sheet. By making possible an accurate examination of the surface of a paper sample, this new microscope fills a great need of the paper industry.

Standards of Quality Maintained—By means of constant examination and comparison, the use of this newly developed apparatus in paper mills will make uniformity of the product more possible and enable the research department to keep an accurate check on surface qualities to make certain that standards are rigidly maintained. It will also provide definite proof, by means of the photomicrographs, as to the surfaces and textures, which can be of great value in the advertising and selling of paper. Its true qualities, unseen to the eye in the sheet, are readily discernible under proper magnification.

As paper is practically opaque, and since light passing through it is not sufficient to light the surface, regular microscope methods are useless. The paper must get its illumination from above.

A paper surface is peculiar in that there is very little contrast between the different fibers of the surface, but differences do exist in the height of the constituents of the paper. Viewed through the ordinary type of microscope, the surface of a paper sample does not look like a surface at all, but rather like a thick layer of straw or hay, shaken up and loosely matted. It is this difference in surface textures of various papers that the Paper-Makers Microscope reveals.

Special Illumination of Object Required—In order that the fibers be made visible, and to amplify the contrast, special illumination is required, that is, illumination directed on the object in such a manner that no direct light, but only light reflected by the object, will reach the eye.

Since the fibers in the paper show so little contrast, the Paper-Maker's Microscope has been specially constructed so that the illumination will amplify the contrast. To increase the contrast, the light is directed on the specimen under oblique incidence, so that the light will be reflected by the fibers into the eyepiece. By having the light directed onto the object from all sides at once, as in this microscope, the high places on the fibers receive the most light, while the lower parts are in comparative shadow. Thus, a high degree of contrast is achieved, which will show up every small unevenness.

Comparative Tests Made Under Identical Light Conditions—The illuminating device is graduated, so that the user can record the angle of illumination used in photographing a specimen. Then at any time in the future, he is able to produce the identical light conditions, so that he can photograph another specimen of the same material for a true comparison.

An important feature of this instrument is its ability to produce actual stereoscopic views of a surface. This is one point wherein it is said that the Paper-Maker's Microscope differs from any other photomicrographic apparatus which might possibly be used for this purpose.

The accompanying illustration shows the complete microscope and photomicrographic camera. At the extreme right is the lamphouse which furnishes the illumination for the paper sample or other object. Next at the left is the oblique annular illuminating device with a light shield, ground glass and object holder showing. The scale on this unit is for reading the angle of illumination. At its left is the microscope itself, the objective, eyepiece and optical system, with focusing adjustments below. At the extreme left is the photomicrographic camera. With this apparatus the samples may be observed through the microscope, then a photograph taken and kept on record.

Instrument Has Wide Range of Usefulness—While designed particularly for paper manufacturers, the instrument can be used for any purpose as an opaque photomicrographic apparatus. Any place where a contrast between the elevations of the constituents of the surface is desirable, this apparatus will fit in admirably. In examining leaf sections, sand paper, wood finishes, rubber surfaces, or other opaque surfaces, it will show up the contrast in the surface elements.

Rubber Covered Wormed Cutter Roll

One of the latest developments of the Cincinnati Rubber Mfg. Co., Cincinnati, O., is a rubber covered wormed cutter roll, shown in the accompanying illustration.

In the old style wormed cutter rolls where the felt strips are tacked onto the roll, a loss of paper is caused by the protruding tack heads marking the sheet. This loss is entirely eliminated by the rubber covered roll. The worms on Cincinnati wormed cutter rolls are ground into the face of the roll and are not made by vulcanizing strips of rubber onto the surface.

The rubber covered roll gives much longer service and needs no attention, and enables the operator to speed up his machine.

The next meeting of the Paperboard Industries Association and of the Trade Practice Division will be held at the Drake Hotel, Chicago. The Folding Box Group and Paperboard Group will hold meetings January 22nd. The meetings of the Container Group and the General Session, including Trade Practice Conference, will be held January 23rd.

1929 Sets Record, Says General Electric Co.

The volume and the dollar value of electric equipment produced in 1929 were greatly in excess of the maximum record of any former year, say John Liston in the General Electric Review for Jannary. This, he explains, was the result of the increased activities in industry, transportation and communication.

The pragmatic worth of research was graphically indicated by the fact that more than 20 per cent of the total income received was for electric apparatus which as recently as a decade ago was either unknown or of negligible importance commercially.

Two record size turbine generators were completed and placed in service: a 208,000-kilowatt, cross-compound unit, and 160,000-kilowatt, tandem-compound unit, each of the largest of its type so far constructed. Of exceptional interest because of its potential influence on the future of central station practice and possible economies, was the growth in the use of turbines operating at steam pressures of 1,200 pounds, the aggregate capacity of such machines completed or under construction being greater than the combined capacities of the preceding six years.

Characteristics and Applications of Chrome-Nickel Iron

Weatherproof iron is the subject of a most informing article in the December issue of Industrial Bulletin of Arthur D. Little, Inc., a publication issued monthly from Cambridge, Mass., and mailed free upon request to all who may be interested in early and authoritative information on technical aspects of industrial development. Mill engineers and superintendents are already familiar with the properties of several rustless steel alloys marketed under trade names, and in the present article, the characteristics, properties and applications of these alloys are interestingly set forth. In an introductory paragraph, it is pointed out that ferrous alloys of the chrome-nickel iron type have been the subject of much research for several years, but are receiving special consideration today when so much attention is concentrated on decreasing corrosion and the great losses it involves.

A typical alloy contains approximately 18 per cent chromium, 8 per cent nickel and up to 0.20 per cent carbon and should not be confused with the metals popularly known for several years as "stainless steel" and "stainless iron." The composition and properties of these two types are quite distinct and each has its own field of usefulness.

Chrome-nickel iron is sold under a number of trade names, such as Allegheny Metal, Carpenter Stainless Steel No. 4, Defistain Rustless Iron, Duraloy 18-8, Enduro KA$_2$, Midvale V$_2$A, Resistal KA$_2$, Stainless N, Sterling Nirosta and Sweetaloy 17. It melts at 2,500 to 2,700 deg. Fahr., takes a strikingly attractive mirror-like finish which endures under atmospheric conditions, and is very resistant to a large variety of chemicals, gases and organic acids, including those from fruits and vegetables. In the soft state it has a tensile strength of approximately 100,000 pounds per square inch. The retention of strength at high temperatures makes the alloy particularly suitable for high pressure, high temperature service, such as is found in gasoline cracking stills. The alloy also resists oxidation at relatively high temperatures. The strength and hardness can be increased by cold work, but the alloy does not lend itself to hardening by heat treatment. It can be readily welded and particularly in the few brands that are available in all forms, is easily workable, can be drawn into wire and piping and deep drawn into various shapes. The methods of heat treatment covered by the Krupp patents are believed to have considerable influence on the easy working properties of some of these alloys.

Industrial Applications—There seem to be enormous possibilities in this metal both for decorative purposes and in the industries. The ceilings and safe deposit boxes in the Royal Bank of Canada have been made of it. It is being used in the new Chrysler building in New York City for the outer covering of the entire tower, for nearly all of the exterior ornamental work, for the store and window fronts in the first three stories and elsewhere in this building. Very attractive mantels for fireplaces are made of it. It can be used in lighting fixtures, for automobile radiators, bumpers, wire wheels and trimmings, for cooking utensils, certain tableware such as goblets, tea sets, platters, bouillon cups, etc. Its resistance to attack by fruits, vegetables, and foods in general makes it particularly desirable for equipment in the packing and cannery industries. It may be used for table tops in restaurants and hospitals, sinks, plumbing fixtures, steam tables, and many other purposes too numerous to mention, which are of everyday interest to the general public.

A few uses to which the metal has been put in the industry are: for the manufacture of evaporators, pipe lines, digesters, stills, condensers, tanks, tank cars, shipping drums and heat exchangers in chemical plants; for sheets, bars, tubes, castings, screws and bolts wherever the type of service demands resistance to corrosion. Specifically, we might mention the following industries: dyes, drugs, dairy machinery, explosives, laundries, oil refining and the paper industry.

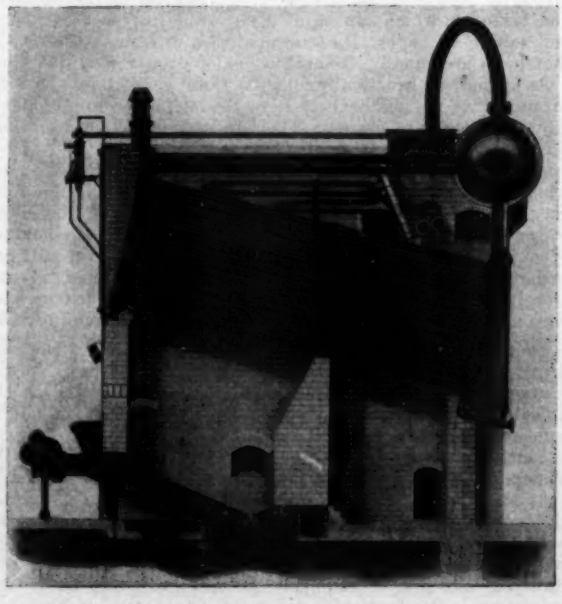
In view of the many remarkable properties of this alloy as already outlined, it seems inevitable that it will eventually replace, in many instances, articles which are now plated with nickel and chromium where the advantage of a solid metal over plated materials from the standpoint of service can be readily appreciated.

A New Single Seam, Hydraulically Riveted, Cross Drum Boiler

The Erie City Iron Works, Erie, Pa., has developed a new single seam, hydraulically riveted, cross drum boiler (patents pending) that is a noteworthy improvement over former methods of construction.

This new design simplifies the construction and presents the following advantages: (1) It is possible to drive all rivets hydraulically which assures a stronger, tighter and more perfect riveted joint than is possible by any other method; (2) only one caulking edge greatly reduces the chance of leakage; (3) the single row of rivets is entirely out of the fire and hot gas zones (see illustration); (4) the method of front header suspension permits all rivets in the hanger to be out of the water or steam spaces. This is made possible by extending the hand hole sheet above the top row of rivets.

The new Erie City cross drum boiler has been carefully designed to provide a wide selection of sizes, to meet low headroom conditions, and to utilize any standard firing method.



Cross section view showing method of hanging and supporting the new Erie City cross drum boiler

Freight Rating on Liquid Chlorine

Mathieson Alkali Works, Inc., vs. Railroads
I.C.C. Docket No. 22607

The liquid chlorine complaint of the Mathieson Alkali Works, before the Interstate Commerce Commission, asking for a general reduction in the freight classification ratings on tank car liquid chlorine, was heard in Washington, December 6th and 7th. The Mathieson Alkali Works case was presented by its counsel, Wilbur LaRoe, Jr., assisted by Harry M. Mabey, Mathieson's General Traffic Manager; Charles E. Bell and Jos. C. Colquitt, consulting traffic experts; Gen. Amos A. Fries, ex-chief Chemical Warfare Service; together with Benjamin T. Brooks and Morris R. Sherrerd, consulting engineers. This formal proceeding marks a continuation of Mathieson's efforts to have the railroads reduce the rating on tank car liquid chlorine in the Official, Southern and Western Classifications, which govern freight charges throughout the United States.

In the presentation of the Mathieson case at this two-day hearing, a very complete showing was made of the conditions surrounding the production and marketing of liquid chlorine in the United States. It outlined the well-known fact that the electrolytic alkali process, unavoidably, must produce three substances,—chlorine, caustic soda and hydrogen, and that manufacture was restricted by the extent of producer's ability to market liquid chlorine. The increasing strength of the consuming market for caustic soda was stressed as causing an economic need for greater productive ability in the electrolytic alkali industry, that electrolytic manufacturers might participate in the increasing demand for caustic soda. The definite trend toward greater production of both chlorine gas and caustic soda by consumers thereof at their own plant locations, together with the depressing influence of this consumer production upon the price levels of liquid chlorine was also set forth. The decline in the bleaching powder market as an outlet for chlorine was shown to have had a detrimental effect upon the industry.

The extreme decline in price level of liquid chlorine coupled with increase of consumer's productive ability, was graphically outlined. In the period of ten years beginning 1920, the open market value was shown to have been steadily reduced; present value of 2¾c per lb. as against nearly three times that selling price in 1920—when liquid chlorine was quoted at 8c per lb.

The importance of chlorine gas as a raw material essential to the chemical warfare service, particularly when transported in the form of liquid chlorine, as well as the necessity for preparedness in the manufacturing, shipping and transportation of the commodity during peace times was elaborated upon in detail by Gen. Amos A. Fries in his testimony.

Mr. Morris R. Sherrerd, consulting sanitary engineer, explained in considerable detail its importance in the maintenance of public health throughout the country, in that chlorine is used extensively as an agent in the sterilization of public water supplies, and unquestionably could and would be more extensively used in disinfection of sewage wastes, thereby preventing contamination of streams and sources of water supplies, provided the commodity could be delivered to the consuming trade, especially municipalities, on a more favorable and economical basis. His expressed opinion was that only by mass production, fostered by the adoption of any measure that might tend to lower the delivered cost of liquid chlorine, could the producer be enabled to maintain its present-day low market level.

As justifying the reduction in rating applied for, all railroad records of the transportation of liquid chlorine since the beginning of its manufacture in the United States were submitted for analysis. These statistics indicated that, while there have been handled considerably over one million cylinders, and at least twenty thousand tank cars filled with liquid chlorine, only 41 accidental leakages, with a total property loss of $2,683, are reported by the railroads as having occurred during the transportation of these filled tank cars and cylinders.

The Mathieson complaint asked for a reduction in the rating from fourth to fifth class in the Official Classification, which governs in that part of the United States, roughly, east of the Mississippi river and north of the Ohio and Potomac rivers; a reduction from fourth to seventh class in Southern Classification Territory, which embraces the territory south of the Ohio and Potomac rivers and east of the Mississippi river, and a reduction from fourth to fifth class in Western Classification Territory, which is that part of the country west of the Mississippi river.

From this it will be seen that the official classification territory embraces all of New England, all of New York State, all of New Jersey, Pennsylvania, Delaware and Maryland, all of Ohio, Indiana, most of Virginia, Illinois, Michigan and Wisconsin. A favorable decision in the Mathieson case, therefore, will approximate a reduction as great as 30 per cent in the rating applicable to liquid chlorine within this great consuming area, and reduce costs in the pulp and chemical engineering industries, and benefit, besides, consumers for sanitation and other purposes, throughout the most important industrial section of the United States, a territory which, roughly, consumes 80 per cent of all the liquid chlorine marketed. To the Southern consuming area a similar reduction in rating is applied for. To the territory west of the Mississippi river, described as Western classification territory, a favorable decision in this case would result in a reduction ranging from 27 to 32 per cent of the present freight rating.

It was shown, in testimony, as evidence of the failure of the carriers to give consideration to the expansion of the industry and the changes that have taken place in the marketing and price levels of liquid chlorine, that the freight classification which at present governs, and is now under attack, has remained unchanged since the rating was originally established in 1907, many years before a pound of liquid chlorine was marketed commercially in this country. The development of tank cars, safety devices and improved methods of handling by the industry, the Bureau of Explosives and the Interstate Commerce Commission itself, was outlined, and compared with the history of the manufacture, transportation and use of a tremendous tonnage of liquid chlorine without the occurrence of a single accident of other than a trivial nature. These facts were set forth as convincing evidence, based upon a long period of actual experience, that the manufacture, transportation and use of liquid chlorine in industry had become so standardized and safeguarded that likelihood of accident, due to hazards of handling, had been made so remote as to be negligible.

In conclusion, it was urged that present day facts had so changed that the basis established in 1907 was no longer justifiable, and that a much lower rating was now warranted.

A favorable decision in this Mathieson case will also have a most important effect in tending to prevent threatened increases in freight rates on tank car liquid chlorine. As heretofore reported in these columns, in a case now pending before the Interstate Commerce Commission for decision, the railroads serving the eastern part of the country have publicly proposed to extensively revise their freight rates on all classes. Under the existing classification rating, which is attacked in the Mathieson case, this revision would make widespread and serious increases in the freight charges on liquid chlorine. Only the success of this Mathieson case will enable the consumers of tank car liquid chlorine to avoid the payment of higher freight charges than they are now subjected to, should the revised class rates, which the railroads are trying to establish, receive the approval of the Interstate Commerce Commission.

Fred D. Holdsworth, engineer in charge of air compressor design for the Sullivan Machinery Co., at its Claremont, N. H., Plant from 1900 to 1928, passed away November 20th. Much of the development of Sullivan air compressors took place under his direction, and he was awarded nearly fifty patents connected with the development of various Sullivan machines.

Stephens-Adamson Mfg. Co., Aurora, Ill., manufacturer of variable speed reducers and conveying, elevating and screening machinery, have recently established a new branch engineering and sales office in Seattle, Wash., located at 521 Skinner Bldg. This office will be under the supervision of Charles J. Horn, formerly assistant chief engineer for the company.

The Month at Washington

CONGRESS Busy—Congressman Vestal has again introduced a bill (H. R. 6990) to amend and consolidate the acts respecting copyright and to permit this country to enter the International Copyright Union. This bill has been up at preceding Congresses but never passed both houses. It provides for a general revision of the copyright laws and is identical with H. R. 8912 of the 70th Congress. He has also introduced H. R. 6987 to amend and consolidate the copyright laws with respect to assignments, etc., which is identical with H. R. 8913 of the preceding session. H. R. 7243 amends the statutes of the United States to provide for copyright registration of designs. A similar bill was introduced by Congressman Sirovich affecting not only designs but also styles (H. R. 7495).

Senator Jones has introduced a bill (S. 2356) to provide for the establishment, operation and maintenance of foreign trade zones in ports of entry of the United States, to expedite and encourage foreign commerce, etc., which was referred to the Committee on Commerce for action.

Congressman Buckbee introduced a bill (H. R. 7395) to extend to government postal cards the provision for defacing the stamps on government-stamped envelopes by mailers, thus extending the permit-ruling to postcards.

H. J. Res. 157 provides for the establishment of an Industrial Relations Commission, seeking to put an end to strikes and lockouts, and industrial discord, to promote industrial peace and a uniform compliance with the laws by both capital and labor, such commission to consist of nine members and to inquire into the relations now existing between employers and employees in the principal industries in the United States with a view to discovering methods which will prevent strikes and lockouts by studying their causes and to develop peaceful relations between employers and employees.

Wholesale Prices—A further recession is shown in the wholesale price level for December, or a decrease of nearly two per cent. With 1926 as the monthly average of 100, we find the following changes for paper and pulp:

Dec. 1928	Nov. 1929	Dec. 1929	Purchasing power of the dollar, Dec., 1929
88.8	87.9	87.9	113.8

Advisory Committee on Business Welfare—The chairman of the National Conference on Business Surveys appointed by President Hoover, has designated 140 executives in various industries to act in the capacity of an advisory committee on business welfare, who will be asked to report from time to time on the condition and outlook of the trades and industries they represent, with a view to disclosing the major trends in business, and whether there are weaknesses in the national economic structure which need correction. The committee thus formed will be known as the Business Survey Conference Committee and will keep close tab on the pulse of the business situation throughout the country, with a view to "business engineering" and devising corrective measures when business gets sick or shows signs of decay.

Income Tax Matters—Congress passed H. J. Res. 133 in record time which lowers the rates applicable to individual and corporation net receipts for 1929 by 1 per cent, thus saving $160,000,000 to taxpayers. Individual taxpayers with incomes this year of $4,000 or less will be taxed at ½ per cent, and those over $4,000 up to $8,000 will pay 2 per cent instead of 3, while those receiving $8,000 or more will pay 4 per cent instead of 5. The tax on corporations is reduced from 12 per cent to 11 per cent. The reduction of rates is confined to the calendar year 1929 but the bill is so framed that without further legislation the rates prescribed by the revenue act of 1928 automatically apply to the calendar year 1930 and all subsequent years unless changed by act of Congress. All taxpayers keeping books on the basis of the calendar year may thus take advantage of the reduction in their return due March 15th. The bill was passed because the estimated surplus in the Treasury for the fiscal year 1930 is approximately $226,000,000.

The Bureau of Internal Revenue has issued a reminder to taxpayers who are employers that they must file information returns respecting payments to employees not later than Feb. 15, 1930, instead of March 15th as heretofore. The information returns affect only fixed and determinable incomes under the revenue act of 1928 and applies where $1,500 or more was paid to a single person or $3,500 or more was paid to a married person.

The Board of Tax Appeals has again affirmed previous decisions that the tax imposed on sales by manufacturers of automobiles is not deductible by individual purchasers thereof (Docket No. 27044).

American Branch Factories Abroad—The Department of Commerce has published a nine page mimeographed report on "American Branch Factories Abroad," because the tendency among the more highly developed American industries is to establish branch factories in foreign countries, and this fact has attracted a considerable amount of attention both here and abroad, and is likely to remain a subject of interest and controversy for sometime to come. The report discusses tariff obstacles, transportation, patent provisions, servicing, etc.

Interstate Commerce Rulings—The nature of the commerce and the continuing intent of the parties was held by the U. S. Supreme Court in a recent decision to be the determining factors in deciding whether a shipment was or was not the subject of foreign commerce in U. S. vs. Erie R. R. (No. 30), holding an order of the Interstate Commerce Commission valid in fixing rates for pulp shipments. The nature of the shipment is not dependent upon when or to whom title to the goods passes, or upon the fact that the transportation was initiated or completed upon a bill of lading which was wholly intrastate. The shipment involved a consignment of wood pulp imported by the purchaser through a broker or agent, the agent being the consignee of the pulp from the original shipper to the port of entry. The broker then presented the papers covering the shipment and ordered a terminal company to ship the goods by rail from the port of entry to the ultimate destination within the same state, with the purchaser named as consignee in the bill of lading. The Interstate Commerce Commission ordered the carrier to establish a rate on wood pulp so imported and transported, and the carriers claimed that the rail shipment in the State was intrastate. The court however held the transportation by rail was a part of the foreign commerce.

In Chas. Boldt Paper Mills Co. vs. New Iberia and Northern R. R., No. 21775, the Commission held that demurrage charges assessed on shipments of scrap paper, in carloads, for detention at New Iberia, La., was not shown to have been, as claimed, the unavoidable result of flood conditions, or to have been unreasonable, and the complaint was dismissed.

In Albany Perforated Wrapping Paper Co. vs. B. & O. R. R., No. 20662, the Commission held that the rate on imported wood pulp, in carloads, from Baltimore and Philadelphia to Albany, N. Y., was not unreasonable or unduly prejudicial, and the complaint was dismissed.

Another decision holds that the carload rate charged on pulpboard from Cedartown, Ga., to Lynchburg, Virginia,

was unreasonable and reparation was awarded (No. 21437).

Forecast for 1930—Representative Kopp, chairman of the House Committee on Labor, says the year will be a good one in industry and indications are that labor, in the main, will find continuous employment. He says labor conditions are improving and on the whole are much better than they would have been if the President had not called the recent business and industrial conference.

President Hoover was recently given assurances by editors and publishers of 150 technical and trade publications, who conferred with him at the White House on the general business situation, that conditions as a whole are favorable, with some weak spots noticeable here and there.

"Business Conditions and Outlook" is the title of a pamphlet prepared by the U. S. Chamber of Commerce, giving a summary of reports submitted to the National Business Survey Conference held under the auspices of the Chamber last month.

Air Express—The more intelligent use of air express as a means of saving a great amount of the annual loss in American business due to slow transportation, is advocated by the Aeronautics Branch of the Department of Commerce pointing out that business men are finding that the use of aircraft is giving them a distinct advantage over competition by eliminating delays. Express has always shown a saving over freight, but air transportation is even better than express. Not only can emergency shipments of all types be made to replace depleted stocks, but such shipments can be used as well to affect major and minor repairs of machinery, etc.

Additional Postage—The Postmaster General is recommending to Congress new legislation to improve the efficiency of the postal service, including among other things request for authority to collect additional postage on insufficiently or improperly addressed mail to which a free directory service is now being accorded.

Use of Lumber Waste in Paper Manufacture—Through the utilization of lumber by-products in the manufacture of pulp, the United States can become substantially less dependent on foreign sources for newsprint paper and at the same time stabilize its lumber industry, according to the National Committee on Wood Utilization of the Department of Commerce, suggesting the establishment of newsprint and wood pulp plants in conjunction with the various lumber concerns of the United States or diversification in lumbering. Recent experiments at the forestry production laboratories have demonstrated that several species of wood which are found in abundance in this country may be used for newsprint pulp, and even show that hardwood can be converted into wood pulp.

Paper Containers in Demand Abroad—Paper containers of all kinds are in greater demand in Great Britain as a result of the growing tendency to sell various commodities, particularly foodstuffs, in packages and boxes. The new egg marking scheme is having a marked effect in this direction, paper boxes now being used in preference to bags and baskets.

Domestic Trade Publications—A revised list of publications on domestic trade, issued by the Bureau of Foreign and Domestic Commerce, has just been released and is available upon request, including a list of publications of all branches of the Bureau and of the Department of Commerce.

A list of all government periodicals has been compiled as an aid to the business librarian, which is also of interest to any persons making use of government publications in behalf of industry and trade. Many of these publications are available free of charge. The list was compiled by the Special Libraries Association.

Elimination of Waste—The month of April has again been set aside by the National Management Congress as the time for the annual national elimination of waste campaign, an incidental part of management week in industry. This movement which began last year has grown very remarkable and has become even international as groups in Australia, China, England and Russia have been assisted in conducting campaigns. During April of last year a large number of companies put on an exhibit waste campaign within their own factories and an even larger number are expected to cooperate this April. A session at the Hotel Stevens, Chicago, will be held March 3rd by the National Management Congress, as the opening gun in the 1930 Elimination of Waste Drive, when a paper will be presented outlining the problem of waste in an industrial plant, which will be followed by a second paper giving methods of attacking the problem.

Employment and Pay Rolls—Employment decreased 3.1 per cent in December as compared with November, while pay rolls decreased 6.8 per cent, according to a report just issued by the Bureau of Labor Statistics, and with 1926 as the average monthly basis of 100, we find the following changes—

	Employment			Pay roll totals		
	1928	1929		1928	1929	
	Dec.	Nov.	Dec.	Dec.	Nov.	Dec.
Paper and pulp	98.5	96.9	96.0	97.0	100.7	98.8
Paper boxes	101.4	103.6	104.1	111.2	113.5	112.2
Paper and printing	101.2	103.1	103.7	103.4	109.1	108.5

Business Failures—There were fewer business failures in 1929 and less liabilities than in 1928, according to data submitted by the Census Bureau, showing a decrease of ten per cent in losses and four per cent in insolvencies, with total liabilities of failures of $332,427,000 as compared with $373,194,000 for the previous year.

Trade Commission Report—The annual report of the Federal Trade Commission is of considerable interest to those following the work of the commission and who seek to keep within the pale of the law. Important phases of the commission's work are reviewed. The commission suggests to Congress an amendment to the Act designed to clarify the compulsory power of the commission to carry on investigations and to strengthen the power to subpoena witness and compel the production of books and papers to facilitate the work of the commission in its inquiry into business and industrial conditions.

Domestic Marketing Problems—The Department of Commerce has issued a "Handbook of Market Data" for the entire United States, giving statistical information on which to base marketing operations and which is claimed indispensable to a scientific appraisement of markets. It is a 535-page handbook, and it is claimed that by using the statistical information presented as a guide it will be possible for distributors to more efficiently plan their sales quotas, allocate advertising expenses, and outline sales territories.

Cutting Out Fiber Losses*

By AUBREY T. TAYLOR

Bedford Pulp and Paper Company, Big Island, Va.

DESPITE the enormous strides made in the reduction of waste, we are nevertheless confronted with a $6,000,000 fiber loss in our industry. This $6,000,000 loss forms a portion of what we commonly designate shrinkage. The total raw materials furnished (including size, alum and clay), less the paper produced, equals the shrinkage for any given period; or shall we say, the difference between the fiber furnished and the paper made constitutes shrinkage. Then too we might make an allowance for the loss in moisture on conversion from pulp to paper. It is very confusing to learn that a certain mill is running a paper with about 2 per cent shrinkage when you consider 4 per cent good for the same grade. Your figures of 4 per cent may represent the same actual loss as the other mill and the difference can, in many cases, be accounted for by the different methods in calculating shrinkage. It would seem that a uniform method in computing the amount of shrinkage would enable mills to compare experiences, without the suspicion that possibly the other fellow used a different method to arrive at his results. In the writer's opinion, the shrinkage represents the difference between the amount of raw material furnished (including size, alum and clay) and the amount of paper produced (less cores and plugs, etc.) This total could be then subdivided into (a)

* Presented at fall meeting of TAPPI, Richmond, Va., Sept. 26, 1929.

Recoverable losses such as, fiber loss to sewer and (b) Irrecoverable losses, such as, loss of moisture from pulp to paper.

Factors of Waste

In order to obtain a close check on whitewater losses and to locate the leaks, we conducted a thorough survey of our mill. At this time all the whitewater with the exception of a portion of the tray water pumped to the machine mixing box, was returned to a whitewater tank in the basement and used only to furnish the beaters. Any excess in the tank overflowed to the sewer and this tank was overflowing almost continuously. The survey pointed to the following factors as responsible for the major part of our losses:

1. Large amount of whitewater to sewer.
2. Excess fresh water used on machines.
3. Inaccurate measuring of raw materials.
4. Moisture loss in conversion from pulp to paper.

The groundwood received from our Colemans Falls plant was charged to us at 31 per cent air dry and moisture tests revealed that this pulp averaged 30 per cent air dry. This pulp was furnished to the beaters on the basis of 10 pounds air dry pulp per lap. Actual tests showed that the laps varied from 9 to 11 pounds, with an average of about 10¼ pounds per lap.

By correcting the amount of groundwood charged to the mill and weighing the pulp into the beaters we reduced our shrinkage figure nearly 25 tons a month.

Saving of Water

Five fresh water showers were used on each machine. The amount of fresh water used was reduced by cutting out four of the five showers on each machine. The whitewater overflow was measured and sampled both before and after reducing the amount of water. Table 1 shows the results obtained by reducing the amount of fresh water consumed:

TABLE 1

Machine	Fiber loss 5 showers Pounds per day	Fiber loss 1 shower Pounds per day	Saving
No. 1	3,746 pounds	2,274 pounds	1,472 pounds
No. 2	4,419 "	3,787 "	628 "
Totals	8,165 "	6,061 "	2,100 "

No trouble was experienced on the paper machines after the number of showers were cut down. In fact in our case the wire life was increased about 25 per cent in view of the deleterious character of the river water used. Since then we have changed our sources of water supply to a creek which supplies the mill from a reservoir. This change resulted in a further lengthening of wire life.

Shrinkage Decreased by Save-Alls

Two Improved Paper Machinery Company save-alls were installed, one for each machine, and connected directly to the whitewater tank. The save-alls eliminated the overflow from the tank on most of our papers and decreased the shrinkage from all sources by approximately one-third.

For the year 1927 our books show a loss of 1,470 tons or about 9¼ per cent shrinkage. The following year after the save-alls had been installed our loss was reduced to 1,004 tons or a shrinkage of 5.9 per cent showing a saving of 466 tons of pulp for the year 1928 with a 6 per cent higher production. Figuring the stock recovered at $50 a ton, which would be a minimum figure, the equipment shows a return of $23,300 on an investment of approximately $6,000.

Character of Fiber Influences Save-All Efficiency

In our mill we make several different grades, using different classes of stock, such as sulphite, sulphate, groundwood and old papers. The save-all operates more efficiently on long fibered stock such as sulphite and sulphate papers. Shorter fibers as groundwood and old papers, fill up the wire of the save-all reducing the efficiency of the equipment and of course increasing the amount of fiber lost. In Table 2 actual shrinkage figures are given covering a year's production on various grades:

TABLE 2

Grade	Furnish	Shrinkage
A	50% Sulphite 40% Groundwood 10% Overissues	5.1 per cent
B	100% Sulphate	1.9 per cent
C	75% Sulphite 25% Groundwood	4.6 per cent
D	75% Sulphite 25% Groundwood	.8 per cent
E	30% Sulphite 70% Groundwood	3.9 per cent
F	20% Sulphite 20% Overissues 60% Groundwood	12.2 per cent

The shrinkage loss is given as a percentage on the stock furnished and includes allowance for loss of moisture from pulp to paper. The greatest loss is found on paper made with spruce groundwood and old papers, decreasing to a minimum in case of long fibered stock as Grade B.

Fiber Losses in Effluent

The fiber lost in the effluent passing to the sewer should account for the difference between paper made and stock furnished after making allowance for loss in moisture, alum, size, plugs and cores. Several test runs were made on our No. 1 machine to check our actual loss to the sewer against the amount shown on our books. Weirs were placed in the sewer lines and readings of the flow were taken every fifteen minutes together with samples of the effluent. The data given in Table 3 represents a fifty-ton run on each grade:

TABLE 3

	Furnished	Paper Made	Loss	Gal. Effluent	Air Dry Pounds	Total Pounds Fiber
Grade	Pounds	Pounds	Pounds	to sewer	1,000 gal.	
B	98,750	95,015	3,735	1,261,157	2.85	3,569
D	103,000	99,360	3,640	961,668	3.63	3,492
	Fiber unaccounted for Pounds			Per cent total shrinkage unaccounted for		
	139			3.83		
	148			4.00		

Inasmuch as practically all of our raw material is weighed into the beater, accurate figures on the amount furnished were easily obtained. The paper made is figured on an air dry basis and the weight of plugs and cores allowed for. The shrinkage of the recoverable loss can be satisfactorily accounted for to within about 3½ per cent of the total loss.

In mills where the stock is furnished to the beaters in slush form, it is very difficult to check up on the shrinkage as the amount of pulp furnished is in most cases estimated. The pulp mill is arbitrarily credited with a certain yield per cord and the paper mill has to make up the difference, either plus or minus. Now if we can account for all of our recoverable losses and add to this correction for moisture, sizing materials and clay, this total would give the shrinkage and in our case we believe more accurately than by establishing a fixed yield for our pulp mill.

Essentials of Management

Accurate cost figures are essential in any program of waste reduction, and this means reliable shrinkage figures. It has been repeatedly demonstrated that the installation of save-all equipment and reuse of whitewater will reduce the recoverable shrinkage close to the vanishing point. Mill conditions vary and methods that produce excellent results in one mill often fail to give satisfaction when applied to another plant. A careful survey of your mill will aid materially in selecting the equipment best suited for your particular requirements.

Keen competition coupled with the desire of many of our states to reduce stream pollution indicates the necessity of cutting our fiber loss to a minimum. Today waste is not tolerated, raw materials must be conserved. The amount of fiber run into the river yesterday constitutes our profit today in many cases. In this connection the technical man can render a real service to his employer, and his state, by spotting the leaks and reducing those extra profits now running into the river to the lowest possible figure.

No exhibition ever held in America exemplified this age of power and super-power in which we live than did the Eighth National Exposition of Power and Mechanical Engineering, which was held in Grand Central Palace, New York, December 2 to 7. It was the most comprehensive industrial display ever held in the famous building. All records for attendance were broken, it being estimated that approximately 125,000 people visited the display.

WISCONSIN

Paper Mills Show Good Year

Opening of the Lakeview mill of the Kimberly-Clark Corporation, Neenah, is the most important news of the paper industry in Wisconsin as it emerges from 1929 into the new year. With this and other expansion, production is sure to show a considerable increase over 1929 throughout the entire state.

Besides remodeling the Lakeview plant to satisfy its requirements, the Kimberly-Clark Corporation erected a four-story fireproof finishing and shipping building containing about 50,000 square feet and equipped with many features for the accommodation and comfort of employees, including restaurant facilities, first aid and medical service rooms.

This mill was purchased when it became evident that the company was finding it necessary to erect a thoroughly modern plant for the manufacture of specialties, a policy adopted in 1912 when newsprint was dropped because the tariff on import was withdrawn. The Lakeview mill was offered for purchase early in 1929 by Sears, Roebuck and Company, then its owners, and because its two machines were of suitable width and speed, the deal was completed and the remodeling followed. Considerable new machinery of special design has been installed, giving the mill a capacity of fifty tons of paper a day. Wall paper and box covers were the first specialty products to be attempted, and many other lines since have been developed. The engineering department kept pace by designing special machinery to meet each need.

Some of these specialties were being manufactured in the Kimberly-Clark Corporation's Atlas mill at Appleton, Wis., but the paper department there was discontinued January 1st and transferred to the Lakeview mill. Production is now under way, with 225 persons employed. Some of those employed at Appleton were retired on a pension and the remainder transferred to Neenah.

Two new digesters are being added to the Sulphite mill of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., so that five hereafter will be in operation. Increased capacity was needed to take care of the demand for the new groundwood book papers now being produced on part of the paper machines. The sulphite capacity will be nearly doubled. The company during the last year erected a new bleach plant, new filtration plants at Wisconsin Rapids and Biron, a new finishing and shipping room, and a garage to house eleven trucks. The company's gross business increased during 1929 in spite of the building and remodeling. Additions to the employed force totaled 49, making the present pay roll 915 persons.

At the Nekoosa-Edwards Paper Co., Nekoosa, the number of employees was increased during the year by more than 100, and the total force now exceeds 1,000. Changes, improvements and enlargements during 1929 have given the company a capacity of 180 tons of kraft paper daily at the Nekoosa mill, and 125 tons of sulphite wrappings, manilas, and bond and glazed finish papers at the Port Edwards mill.

Another Wisconsin River Valley plant showing a good year is the Ahdawagam Paper Products Co., Wisconsin Rapids, with a 16 per cent gain in business and an increase of eight employees. The company spent $30,000 on additional machinery and now employs 74 persons. The outlook for 1930 is considered still brighter.

If figures are to be accepted as a criterion, the 1929 paper and pulp industry in Milwaukee, remained at about the same point as it rested after 1928. Nine firms were in existence in Milwaukee in 1928 while the same number finished the year of 1929. The nine firms employed 340 employees in 1929 as against 337 in the year preceding. Wages received by these employees amounted to $559,325 in 1929 as against $525,514. This shows a slight increase in wages paid the laborer. $923,740 was the total of capital employed and was a decrease of $32,111 under the total of $955,851 of 1928. Value of the product was $2,540,312 in 1929 as against $2,393,-937 in 1928. Export business totaled $4,742 in 1928 while the 1929 export business has not yet been determined. These figures were issued by the commercial service department of the First Wisconsin National bank in their annual survey of Milwaukee industries.

A number of paper mill owners attended a meeting held at Oshkosh recently to discuss with the Wisconsin Conservation Commission forestry matters which are important to the saving of the future timber supply of the State. It was agreed that slash should be removed when logging, and that this work should be under control of the State for a distance of 100 feet back from public highways. This will help to prevent forest fires, the greatest cause of timber loss, it was explained. More rigid control was advocated for the issuance of fire burning permits, and more rigid laws covering the throwing away of lighted matches, cigarette ends and the like. The lumberman proposed, through A. L. Osborn, that a tax of one cent per acre be levied on timber lands, the entire proceeds to be used for fire prevention and control.

Marathon Re-elects Officers

Officers and management of the Marathon Paper Mills Co., with principal offices at Rothschild, Wis., will be unchanged for the year 1930, according to results of the annual meeting of stockholders. D. C. Everest, general manager, continues in that capacity and as vice president. The other officers and directors are: Cyrus C. Yawkey, president; G. S. Gaylord, vice president; B. F. Wilson, treasurer; P. M. Wilson, secretary; A. M. VanDouser, assistant secretary; Ben Alexander, W. H. Bissell, C. S. Gilbert, M. P. McCullough and C. J. Winton, directors.

Reports from the Menasha branch, formerly known as the Menasha Prdoucts Co., indicate that the new carton plant will be ready for the installation of machinery before February 1st. The new building is being hurried to completion because of the urgent need for it. The printing machinery will be housed there, and the old press rooms will be torn down.

All administrative departments of the carton division except the sales section were moved back from Chicago to Menasha on January 1st, after a year of operation in the former city. The planning, credit and billing departments are among those returned to Menasha. Sales offices will be continued in the Wrigley Bldg., Chicago.

Safety Certificates Awarded

Certificates for regular attendance at the highly successful safety school conducted during the fall at Neenah and Menasha, were awarded at the recent closing banquet to the following number of employees: Gilbert Paper Co., 57; Marathon Paper Mills Co., carton division, 35; Kimberly-Clark Corp., 29; Menasha Wooden Ware Corp., 18; Wisconsin Tissue Mills, 10; George A. Whiting Paper Co., 5; George Banta Publishing Co., 9, and to others from the Bergstrom Paper Co., John Strange Paper Co., and Menasha Paper Mills.

Nearly 300 persons received certificates at the closing banquet of a similar school conducted at Wisconsin Rapids, in which the Consolidated Water Power and Paper Co. was prominently identified.

Mills at Appleton, are co-operating in a safety school which is to be started this month, and to continue until spring. The school has been conducted annually in the past with a large enrollment.

Paper Mill Employees Get Group Insurance

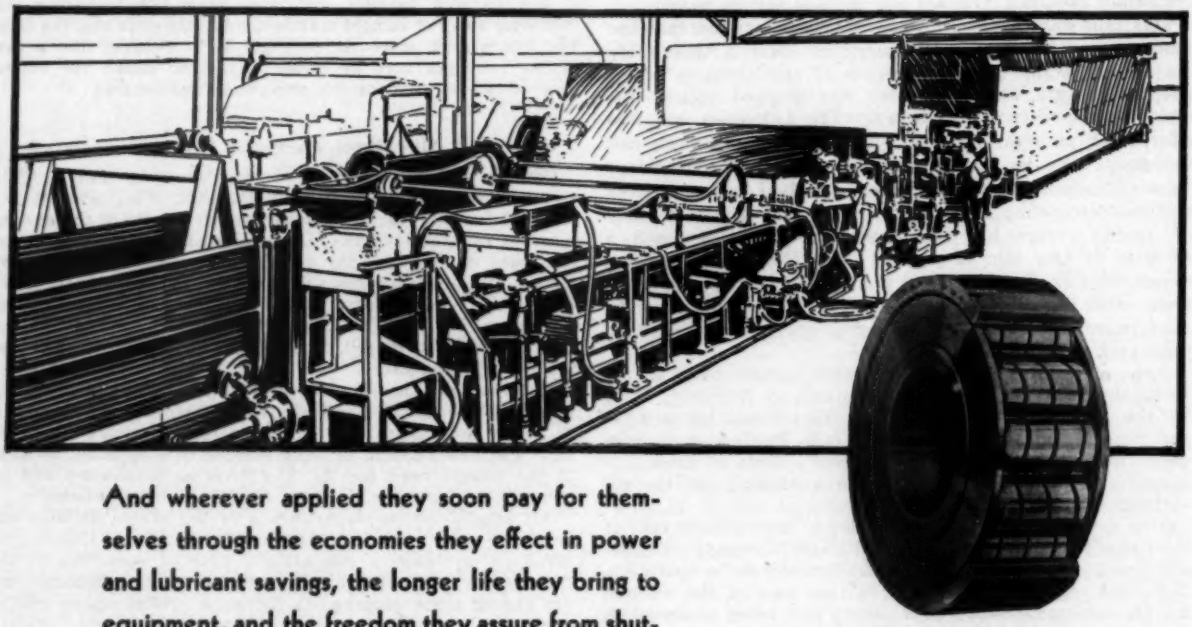
Executives and employees of the Wisconsin River Paper & Pulp Co., Neenah, have recently joined together in acquiring group life insurance protection. The policy was placed with the Prudential Insurance Company of America, the total amount involved being $136,000, covering 142 lives.

Each worker receives insurance protection in amounts ranging from $500 to $1,000, according to the length of serv-

Include Hyatt Economies in your 1930 Appropriations

To reduce the cost of producing each ton of paper is the objective behind the appropriations now being provided for your production plans and improvements to existing equipment.

Hyatt Roller Bearings help you to realize your aims. For many years they have been assisting in producing pulp and paper at the minimum equipment upkeep and maintenance cost.



And wherever applied they soon pay for themselves through the economies they effect in power and lubricant savings, the longer life they bring to equipment, and the freedom they assure from shutdowns ordinarily caused where faulty plain bearings are employed.

Look over your production program—check the contemplated improvements to your present equipment. Surely with their proven ability to help accomplish the things you want to make possible, Hyatt Roller Bearings will be included in your plans for 1930.

Let us tell you about the application of Hyatt Roller Bearings for both new equipment and for changeovers. You obligate yourself in no way by requesting this data or the services of our engineers.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago Pittsburgh Oakland

HYATT

ROLLER BEARINGS

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ice, and the policy is of the contributory type, the workers paying a part of the premiums and the employing company assuming the remainder of the expense.

Nekoosa-Edwards Loses Appeal

Nekoosa-Edwards Paper Co., Nekoosa, lost in its appeal to the Wisconsin supreme court from the Dane county circuit court affirmation of a railroad commission denial of a permit for a dam in Four Mile creek.

Situated near the plant, the dam was used to create the paper company's water supply. Two years ago the dam was completed after the commission had approved construction plans but refused to grant a permit for the dam because the company request would not recognize the state recapture powers.

The State of Wisconsin has the power to retake, as public property, and with suitable compensation, any dam over 30 years old. Maintaining that its water supply would be cut off, the paper company wished to have reasonable use of the dam to create its own water supply, but the State wished to have the water supplied to the company at a rate regulated by the State. The mill owners balked at this request.

Arguing that the stream is navigable and producing several witnesses to affirm this fact, the commission wished to have the stream be recognized as a public place, under the control of the State. The power company witnesses maintained that the rivulet was too crooked for even log running and too shallow for boats.

It was the opinion of railroad commission dam experts that if the river is navigable, the lake it creates, known as "Nepco Lake," must be opened to the public; if the stream is not navigable, the company should fence it in and make it a private lake for its own use. The supreme court affirmed the verdict of the Dane county circuit court.

Oscar Simpson, for a number of years connected with the Graham Paper Co., St. Louis, has recently joined the Flint Paper Co. at Milwaukee. He has been elected secretary of the Milwaukee concern.

Overproduction has to some extent been overcome in the fiber and paperboard industry of Wisconsin, according to a statement of George E. McKowen, secretary of the Hummel & Downing Co., Milwaukee. Intense selling and the adoption of paper cartons in other lines have resulted in a better absorption of the output. Full time operations have characterized the mills for sometime and orders are booked well into the new year.

More adequate facilities for the United States Forest Products Laboratory, Madison, Wis., are in prospect. Governor Walter J. Kohler has made formal request to President Hoover to include in appropriations $900,000 for a new laboratory building. The State sometime ago deeded land to the Federal Government for this purpose at the University of Wisconsin campus, but the matter has been pending for the last eight years. The new building would increase the efficiency of the laboratory in research for the lumber, paper and allied industries.

Dells Improvement Company Sold to Northern Power

Stockholders of the Dells Improvement Co., Eau Claire, have sold their holdings to the Northern States Power Co. The deal was consummated in order to guarantee adequate power at all times to the Dells Paper and Pulp Co., of Eau Claire, and remove a situation which might at sometime hamper operations.

The Dells Improvement Co. was the holder of a 99-year lease with the city of Eau Claire on the Dells dam, from which the paper mill derives its power. The Northern company controlled the flow of all other dams in the Chippewa river and desired to hold the water back ten hours a day when not needed. A temporary agreement made it possible for the paper company to obtain electric power when needed, but by the terms of the sale of the Dells dam rights to the power company, a contract was executed which will give the paper mill adequate power at all times no matter what the amount of water available. Cheap night power rates are provided for wood grinding.

First reports were that the power company had acquired control of the paper company, but the facts reveal only an adjustment of differences over the power situation.

Thirty-three sales representatives of the Northern Paper Mills, Green Bay, held their annual convention at the home offices over the holiday period. The year 1929 was the best in the company's history, Judson G. Rosebush, vice president and general manager, told them. Advertising plans for the next year were explained by Glenn Sample, president of Blackett, Sample, Hummert and Co., Chicago. W. P. Wagner, president of the company, complimented the organization on its work. Some time was devoted to an explanation of new products that will be offered this year, and a banquet for these men and other executives and employees of the company also was held.

Review One-Day Rest Law

Most of the paper mills in Wisconsin were represented at a meeting held at Appleton, on January 10th on call of the Wisconsin Industrial Commission. Rulings under which the "One-day-rest-in-seven" law was modified about a year ago to meet the peculiar situation of paper mills were reviewed to see how the plan had worked out.

It had been found that some of the mills were following the rules as laid down, but that others had not been able to comply. The latter were given opportunity to explain the circumstances which prevented compliance, and others who had worked out satisfactory plans were asked to discuss such points. The commission had permitted mills to employ men for a maximum of three hours on Sundays for necessary repairs. The conference method is being used to make the law effective instead of resorting to punitive measures.

Offices of the Multi-Print Co. have been moved from Neenah, to New York City because of extensive exporting activities. John Kimberly and son, Knox Kimberly, who head the business, will continue their residence at Neenah.

About 200 carloads of pulpwood will be delivered daily out of northern Michigan during this winter's cut, according to officials of the Chicago and North Western railway. The total timber cut will be 37,000 carloads.

Webster E. Brown, founder and first president of the Rhinelander Paper Co., Rhinelander, died last month after an illness with pneumonia at Chicago. He was recognized as a pioneer who brought railroads and industries to the wooded sections of northern Wisconsin.

The inventor of the paper pocket for cigars, Orville L. Parmenter, of Racine, died recently. He was president of the Racine Paper Products Co.

An estate of $75,000 in personal property was left by the late Frank Hoberg, founder of the Hoberg Paper and Fibre Co., Green Bay. He also left real estate valued at $10,000.

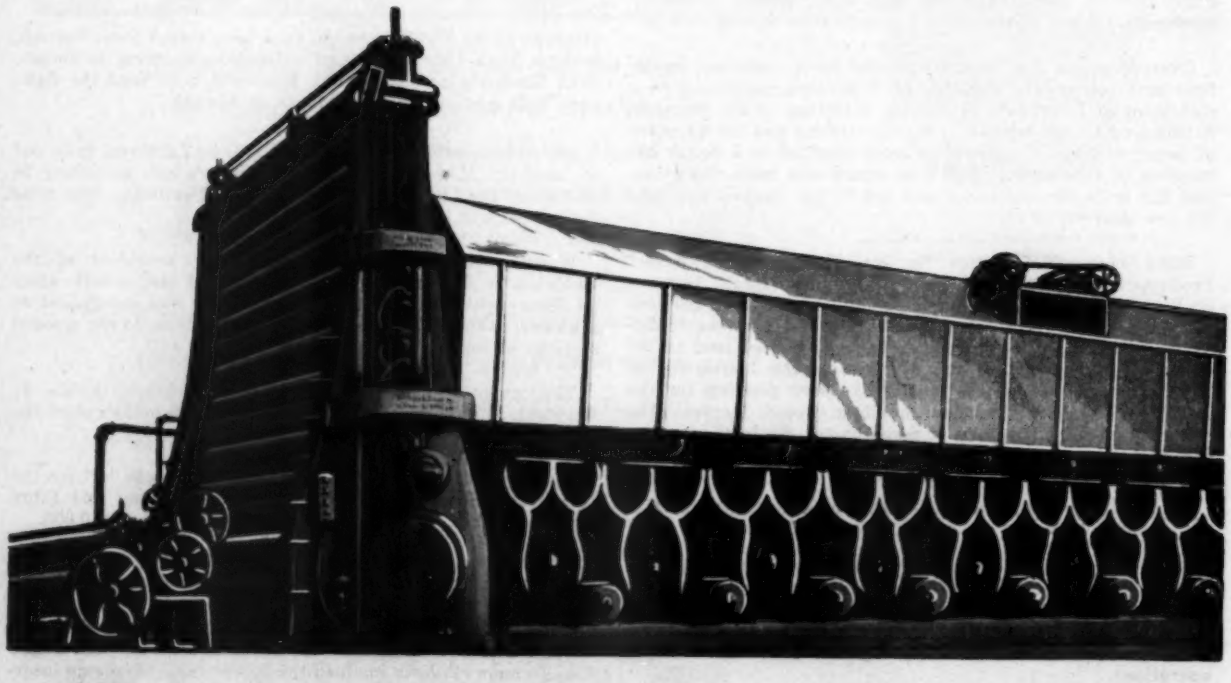
The Sawyer Paper Co., Neenah, wholesaler, has completed erection of a new office, warehouse and shipping room and has moved into the building.

Recent orders booked by the Tomahawk Pulp and Paper Co., Tomahawk, have enabled the company to overcome interruptions of the last several months. Two hundred men are now employed steadily and the outlook is much improved.

The Northern States Power Co. has purchased the dam, power plant and flowage rights of the Cornell Wood Products Co., Cornell, manufacturer of wall board. The deal in no way affects the Cornell company proper or its operations or management.

Penberthy announces .. A

YOU CAN NOW PAY FOR THE PENBERTHY PAPER DRIER EQUIPMENT OUT OF THE SAVINGS IT IS . . . GUARANTEED TO MAKE



PENBERTHY PAPER

A. P. & P. A. Annual Meeting

For the first time in three decades the annual meeting of the American Paper and Pulp Association; the N. P. T. A. and affiliated associations and sections will be held in a different hotel. The Waldorf-Astoria is now a memory. As a result of a careful survey of hotel facilities in New York, the Pennsylvania Hotel has been chosen for this year's meetings, which will be held February 17th to the 20th, inclusive.

Plans are under way to make this year's business meeting of the A. P. & P. A. an outstanding one. Matters of vital interest to the industry will be frankly and thoroughly discussed. The annual banquet is being planned with care; this year's effort will surely measure up with that of the past.

As usual reduced railroad rates will be available to members of the Association, the N. P. T. A., and their affiliated associations. The "identification certificate" plan initiated last year, will again be used. Under this plan round trip tickets to New York for a five-day stay can be purchased at the rate of one and one-half fares. New York hotels are particularly busy in February and it is a good plan to make reservations as early as possible.

Wax Paper Manufacturers Win Case

The second class rating for oiled and waxed wrappers, printed and cut into sheets, as adopted by the classification committee of the Interstate Commerce Commission has been rescinded, the commission now agreeing to publish third class rating on such printed waxed paper in the next classification.

The original complaint was entered by the Saniwax Paper Company, of Kalamazoo. Last summer the American Waxed Paper Association, represented by R. N. Beebe, counsel, and Paul S. Hanway, manager, appeared for the association members and others before the Consolidated Classification Committee at Maplewood, N. H., and argued in favor of this complaint, submitting a lengthy brief. The Saniwax Paper Company was again heard the week following, before a meeting of the Western Classification Committee at Chicago.

The savings from the reduction in rates go entirely to the bakers and others using this product, since the printed sheets are shipped f.o.b. mill, though whether the bakers will make a claim for refunds is not certain. Credit for success in obtaining the decision goes to the Saniwax Paper Company, the Kalamazoo Vegetable Parchment Company, the American Waxed Paper Association and others who were fortified with data and facts not available to the baking industry.

T. A. P. P. I. Represented on Century of Progress Committee

All national associations representing the chemical industries have been asked to collaborate with the Chemical Engineering Committee of the Chicago Century of Progress Celebration in 1933 in the development of plans for a chemical engineering exhibit.

The Chemical Engineering Committee is being formed by Dr. Alfred H. White, head of the department of chemical engineering at the University of Michigan. The committee is to be composed largely of members of national associations. Those already appointed are: Stanley Krall, Rubber Manufacturers Association; H. J. Rose and R. B. Harper, American Gas Association; R. G. MacDonald and W. G. MacNaughton, Technical Association of the Pulp and Paper Industry; S. H. Wilder, Manufacturing Chemists Association of the United States; Crosby Field, American Society of Refrigerating Engineers; William G. Schneider, Copper and Brass Research Association and R. A. Plumb, American Paint and Varnish Manufacturers.

George A. Whiting, president of the George A. Whiting Paper Co., Menasha, Wis., and E. A. Oberweiser, secretary-treasurer of the Whiting-Plover Paper Co., Stevens Point, Wis., have been elected directors of the Wisconsin Shares Corporation, a new investment trust capitalized at $3,000,000. Its head offices are at Milwaukee, Wis.

West Virginia's First Commercial Forestry Conference

The first forestry conference to be held in the State of West Virginia was held under the auspices of the West Virgina General Forestry Committee, assisted by the Chamber of Commerce of the United States, December 4 and 5, 1929, at the Hotel Ruffner, Charleston.

The West Virginia meeting was the third forestry conference of its kinds to be held in this country. The movement was inaugurated at the First Commercial Forestry Conference which was called by the U. S. Chamber of Commerce at Chicago, in November, 1927, and in March, 1928 Wisconsin held the first state forestry conference at Milwaukee.

Many subjects covering the practical application of forestry measures within the States were discussed at the meeting, and recommendations on these topics included in the resolutions adopted by the conference.

A.S.A. Affiliated with International Ass'n

Announcement that the American Standards Association has become a member body of the International Standards Association was made at the annual meeting of the A.S.A. at the Hotel Astor, New York, on December 18 by William J. Serrill, president. As the result of this action, all of the national standardizing bodies except those of Great Britain, Canada and Australia are members of the International Association. The countries now represented, in addition to the United States, are: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Holland, Hungary, Italy, Japan, Norway, Poland, Roumania, Russia, Sweden and Switzerland.

Announcement was also made at the meeting of the re-election of Mr. Serrill as president and Floyd M. Chapman as vice president for the year 1930.

Establish Award for Achievement in Science

Search has been started for a miracle-worker in science—for an American citizen whose study or experiment bears the promise of achievement of the greatest value to the world.

To the man or woman whose accomplishment in the 12 months prior to June 30, 1930, meets this test, it is announced, Popular Science Monthly will award a prize of $10,000 accompanied by a gold medal. A similar award, the largest in America for scientific accomplishment, will be made annually thereafter.

In making this announcement, O. B. Capen, president of the Popular Science Publishing Co., explained that the award was instituted with a dual purpose—to heighten the interest of the American people in those conquests of the laboratory and the workshop which benefit the entire community, and to focus attention upon the many scientific workers who, without thought of personal profit, toil to better man's control over his physical surroundings.

The award will be bestowed under the auspices of the Popular Science Institute, a research organization maintained by the magazine, of which Prof. Collins P. Bliss, associate dean, New York University, is director. The Institute has enlisted the services of twenty-four leaders in American science to serve as a Committee of Award, whose task it will be to select the prize-winning effort.

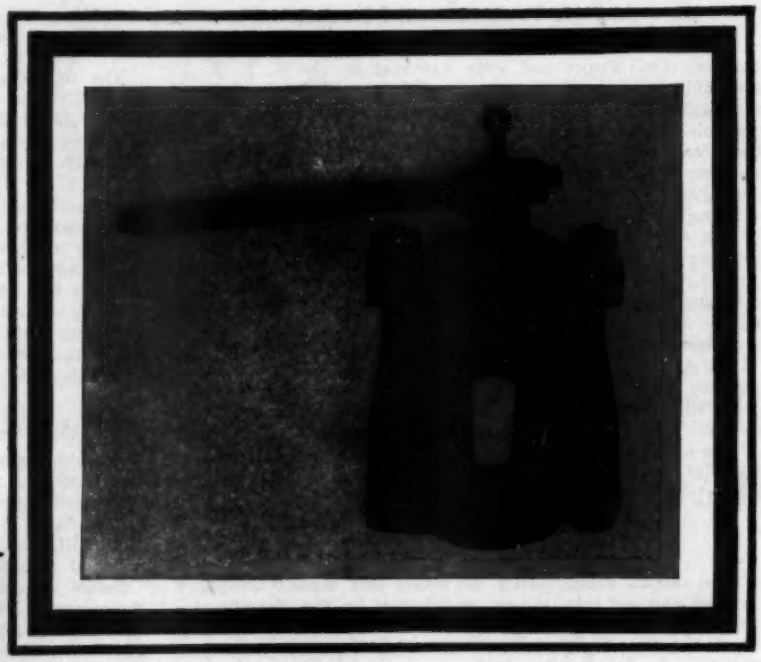
The prize will be conferred for the first time in September, 1930, and the initial period of scientific accomplishment to be considered by the Committee of Award will be the 12 months ending June 30, 1930. All scientific workers, professional and amateur, academic and commercial are eligible.

Miss Tanner Weds L. E. Miller

Announcement has been made of the marriage on December 31, at The Little Church Around the Corner, New York City, of C. Lucile Tanner, of the staff of the Import Committee of the American Paper Industry, and Laurence E. Miller of Kew Gardens.

Mrs. Miller, who came to New York from Syracuse when the Import Committee was formed, will continue as its secretary, where she has been assistant to Warren B. Bullock, manager of the organization.

MERCO



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Opened and closed a million times in a year and a half's severe service, the Nordstrom Valve shown above is just as efficient today as it was when installed. During its service, the valve required no maintenance or repair of any sort, resisted leaks and was always easy to turn.

Nordstrom Valves are leak-resistant because application of a patented hydraulic lubricating principle forces lubricant under pressure around the plug, assuring a tight closure and preventing the entry of foreign matter. Nordstrom Valves won't stick because the lubricant exerts an upward pressure on the tapered plug that releases the plug should it ever be tight.

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Buenos Aires, Argentine—General Electric, Soc. Anon., Victoria 615 Esq. Peru.

PACIFIC COAST

CALIFORNIA

Crown-Zellerbach Executives Hold Conference

The principal event of interest to the paper trade last month in San Francisco was the conference of sales managers of the Crown-Zellerbach corporation and subsidiaries. Delegates were present from the Northwest and from California cities and the meeting was a live and constructive one.

I. Zellerbach, president of the corporation, opened the meeting with an address of welcome. M. R. Higgins followed with an enthusiastic talk on "How to Get the Best Out of the Conference."

Addresses which were closely connected with sales activities were given by R. A. McDonald who discussed the "Sales Policy of the Crown-Willamette Paper Company"; Mason B. Olmstead who outlined "The Year's Activities," and some general discussion on educating sales representatives.

The increased use of paper and paper products in the fruit packing industry was a topic of wide interest on the program, as was also novelty paper and stationery specialties. Wrapping paper problems came in for a share of discussion and there was also considerable attention given to printing in its relation to the print papers. A special printing paper session was held in which stress was laid on customer appeal. James Nisbet spoke on the advertising phase at this session. Others who took part included Gordon Murphy, L. L. Larimer, O. C. Sayles and James Igstadter.

On the general program the principal speakers included H. L. Zellerbach, G. J. Ticoulat, R. C. Clark and J. L. Taylor.

WASHINGTON

More New Mills Rumored

Closely following the many new construction projects either already announced or under way, comes a rumor of other possible pulp and paper plants for the Northwest. Two such indications were noted the last week in December. A new mill for Hoquiam was assumed as a probability when Mayor Martin F. Smith at a city council meeting held December 24 appointed a committee to negotiate the purchase of an industrial water supply from Aberdeen to meet the needs of a new industry which would locate in Hoquiam. "Information has reached me that this will be necessary," the mayor declared, although the names of the individuals or company were not disclosed or the nature of the industry. However, since the pulp and paper mill industry is growing more active in this region all the time and since no other industry would take as large a quantity of water as that requested, the report appears to have some justification.

General improvement in the industrial situation in all lines in this region was noted when most of the plants shut down only one or two days at Christmas. The Grays Harbor Pulp and Paper Co. was only closed Christmas day.

Another paper project rumor emanated from Kalama, when on December 28 it was announced that George N. Campbell, banker of that town, had purchased a site on the Columbia river owned by the Columbia River Door Co. Reports following this purchase indicated that both a paper mill and a large wood-working plant might be indicated by the deal. The Kalama river has a large flow of water that does not require treatment for use in paper manufacture it is stated.

The Pacific Straw Board and Paper Co., Longview, which has heretofore been purchasing all its wood pulp from Norway, now has plans to construct its own wood pulp mill to provide five or six tons of pulp daily for the manufacture of its products. The company has contracted for 2,000 cords of cottonwood to be cut on islands in the Columbia river in the vicinity, which will be floated on barges to the plant.

The Olympic Forest Products Co., which is building a plant at Port Angeles, will install the first Minton vacuum dryer on the west coast, this equipment now being in the process of manufacture at the plant of Rice, Barton and Fales, Inc., eastern concern, which is furnishing considerable equipment for this new project.

Two changes in kraft mill personnel in the State occurred last month when Douglas E. Read resigned as superintendent of the Crown-Willamette kraft plant at Camas to be succeeded by George Nott, and Joseph Hedin resigned from the superintendency of the kraft mill of the Union Bag and Paper Power Corporation at Tacoma.

Blake, Moffitt & Towne representatives held their annual conference in Seattle late in December. J. C. Whitelaw is local sales manager.

The Puget Sound Pulp & Timber Co., whose plant at Everett is under construction, has ordered two K.M.W. late model drying machines for bleached pulp from Paper Machinery, Ltd., Montreal.

The Zellerbach Paper Company of Seattle, Wash., has been appointed an agent for Brown's Linen Ledger, one of the products of the L. L. Brown Paper Co., Adams, Mass.

OREGON

Stockholders of the Northwest Pulp and Paper Co., which concern sold stock for a projected plant at Astoria, are endeavoring to stir the company into action, either to regain the money paid for stock or to find out what the directors expect to do regarding the building program. Early in December the stockholders met and chose Judge Burr Tatro and Chris Schuebel, attorneys of Oregon City, to investigate the condition of the company, either with the idea of co-operating with the directors for the construction of the mill or in securing refunds in case the project is cancelled. Stock to the amount of $260,000 was sold, it was reported.

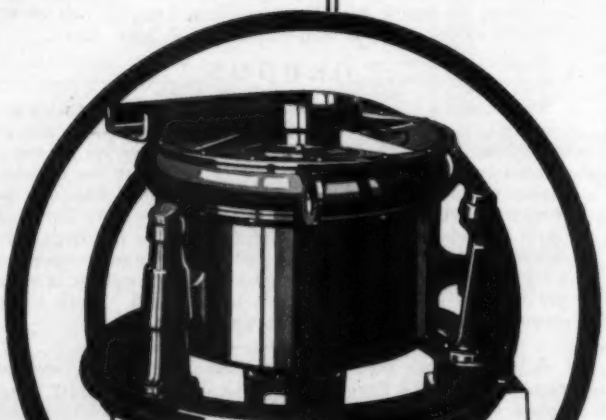
A. B. Wilt has been made superintendent of the new pulp plant of the Sitka Spruce & Pulp Company at Empire, which began operation last month. C. McC. Johnson is president of this company and James S. Lyons is secretary.

The Columbia Paper Box Co., of Portland, and the Seattle Tag & Label Co., of Seattle, merged in December, and the plant of the former will be again enlarged, according to George G. Guild, president. One year ago the Columbia Box and Paper Co. built an addition to the plant and this year another expansion of the same size took place. The company has added to its line of products and employs about 80 persons, with business steadily on the increase according to Mr. Guild. B. H. Gilman is in charge of the Seattle headquarters.

Extra dividends for holders of common stock in the St. Helens Pulp and Paper Co., St. Helens, were declared by directors at the time they voted the regular quarterly dividends payable in January. Each of these disbursements were 2 per cent. Inasmuch as the company has paid regular quarterly dividends of 2 per cent, it is pointed out that this places the stock on a 10 per cent basis. According to the terms of the bond issue, the St. Helens Pulp & Paper Co. is required to have a surplus of $500,000 before dividends can be paid on the common stock. The company has spent during the past year about a quarter of a million in expansion.

Graton & Knight Co., Worcester, Mass., has appointed Colossus Belting and Packing Company of Portland as authorized distributor for its lines of leather belting, leather products, rubber belting and mechanical rubberized goods in the state of Oregon.

The Jaite Bag Co., which some months ago opened its Pacific coast branch factory at St. Helens, expects to start shortly after the first of the year turning out an added line of products following installation of new machinery as previously announced. Since the company started initial operation in St. Helens, it has been making bags for the cement trade



IT'S BETTER TO BE FIRST

The mills that profit most from improvements are the mills that adopt them first. Mills that are now installing Bird Centrifiners [eleven of them, so far] will be making paper that is really clean, making it at a greater net profit, while less progressive competitors are wondering what it's all about.

Let us give you complete information on Bird Centrifiners* now.

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BIRD MACHINE COMPANY

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BIRD MACHINERY

NOW YOU CAN MAKE PAPER THAT IS REALLY CLEAN . . .

USE BIRD CENTRIFINERS

exclusively. With the new machinery in operation the company plans to turn out bags for seeds, building materials of various kinds and numerous dry products. The Oregon Manufacturers Association, whose membership consists of manufacturers and dealers of state products, is lending its support to the new enterprise by giving large orders to the Jaite plant.

The Hawley Pulp & Paper Co. directorate voted the regular dividend of $1.75 on the first preferred payable stock of record December 20, according to Blythe and Co., Portland, which firm took over the management last July.

Carter, Rice & Co. will soon move its Portland headquarters from the front street location to the building being constructed for them at Sixteenth and Johnson streets. One of the big lines which the company will handle is the Caslon bond of the Munising Paper Co., Munising, Mich. J. W. Murphy is local manager in Portland.

Warren M. Behrend

To save the lives of children in a school bus that turned suddenly in front of him on the afternoon of December 19, Warren M. Behrend, only son of E. R. Behrend, President of Hammermill Paper Company, deliberately swung his car off the highway near Pleasant Hill, N. C., and was instantly killed. A schoolmate, Ned Richardson, received injuries from which he recovered. Warren Behrend, who was in his twentieth year, was driving from Washington to Charleston to join his parents and other relatives for the Christmas holidays.

From the evidence of witnesses and state troopers it is clear that young Mr. Behrend, after stopping at a gasoline station, was getting under way, driving carefully, when a school bus full of children coming from the opposite direction, turned suddenly in front of him to enter a side road. Veering quickly to avoid striking the bus and injuring the children, the Behrend car swung out on the soft shoulder of the road and turned over.

Impressive burial services were conducted on Sunday, December 22, in the Chapel of the Resurrection in the National Episcopal Cathedral in Washington, D. C., by Bishop John C. Ward of the diocese of Erie. Coincidental services, held in the Cathedral of St. Paul at Erie, Pennsylvania, were attended by hundreds of the personal friends of the family who took this opportunity to express their affection and sorrow.

After the Washington services, the body was placed in the community mausoleum adjacent to the National Cemetery. The decision as to a permanent resting place will be made later by the family.

Cash Bonus to Encourage Safety

St. Croix Paper Company, Woodland, Maine, which operates a plant employing upwards of 400 men, has adopted a cash safety bonus plan for the encouragement of accident prevention. It will be recalled that the St. Croix Paper Company was the winner of both the major award and the Group B award in the 1928 National Safety Contest and carried off the national championship for its group in 1929.

The management of the St. Croix mill announces that it will pay $5 in gold to every member of a division when that division's total man-hours is equal to 100 man-years. Men holding odd-numbered time cards form one division, while those holding even-numbered cards form the other. Under present conditions it is stated that a division can attain the coveted 100 man-years total in less than six months' safe work.

Lost-time accidents will operate to reduce the accumulated total of safe work and postpone the date of award accordingly. Neglect to report at once the slightest scratch, and all the way through to a permanent disability, are subject to penalties graded proportionately.

General Manager L. J. Parant in a statement to the men said: "I sincerely hope this bonus will serve to stimulate interest in safety matters even beyond that high pitch now existing. It is offered with the hope that further reduction in suffering and crippling will be brought about in the years to come."

◆ NEW YORK CITY ◆

Supply Dealers Elect

The annual meeting and election of officers of the New York Association of Dealers in Paper Mills' Supplies, Inc., whose membership comprises most of the large concerns in the metropolitan district dealing in raw materials for paper mills, was held on the evening of December 11 at Conte's Restaurant 432 Lafayette Street, New York. Bert Lorenz, of D. Benedetto, Inc., was re-elected president of the association for the ensuing year, as was Andy C. Costarino, of the Hicks-Costarino Company, Inc., as vice president; Walter H. Martens, of George W. Millar & Company, Inc., as treasurer, and Alfred J. Moran, of A. J. Moran & Company, Inc., as secretary. The Board of Directors elected is composed of Joseph Benedetto, of D. Benedetto, Inc.; Joseph Carrano, of James Carrano's Sons; Louis F. Darmstadt, of Darmstadt, Scott & Courtney, Inc.; Anthony S. Gaccione, of the Box Board & Lining Company; Harris Goldman, of the Leshner Corporation; George W. More, of George W. Millar & Company, Inc.; Charles Passanante, of the Wilson Paper Stock Company, Inc., and J. J. Patricof, of the Sterling Mill Supply Company, Inc.

It was announced at the meeting that the annual banquet of the association will be given at the Hotel Commodore on the evening of Tuesday, February 18 next, during the week of the American Paper and Pulp Association's convention in New York. The association also adopted a new set of waste paper classifications which will govern transactions in New York City, packing of waste paper for board and paper mills.

In an accident on December 3 in the paperboard mill of the Davey Company in Jersey City, William Roe, 40 years old, of Jersey City, was crushed to death in one of the paper stock beaters in the mill. Roe, an employee of Colgate & Co., manufacturers of toilet articles, was supervising the destruction of redeemed coupons of the Colgate company which had been sold to the paper company as waste paper. In some manner he fell into the beater and was killed before the machinery could be stopped.

Executives and employees of the Wisconsin River Paper & Pulp Company of Neenah, Wis., have joined together in acquiring group life insurance protection, according to an announcement by the Prudential Insurance Company of America from its home offices in Newark, N. J., which company placed the policy involving a total of $136,000 of insurance and covering 142 lives. Each worker receives insurance protection in amounts ranging from $500 to $1,000, according to the length of service, and the policy is of the contributory type, the workers paying a part of the premiums and the employing company assuming the remainder of the expense.

The St. Regis Paper Company and affiliated corporations have leased the entire twenty-fourth floor of the Lincoln Building in East Forty-second street, across from Grand Central Terminal, and will soon move its offices from 15 Broad street, New York, to the new location.

The Luzerne Paper Corporation, of Hadley, N. Y., which recently filed a petition in bankruptcy, has filed schedules showing liabilities amounting to $213,408 and assets of $906,319. The mill of the company manufactures container, chip and specialty paperboards.

Alfred Bunge, importer of wood pulp and other paper manufacturers' supplies, has moved his offices from 500 Fifth avenue to 33 West Forty-second street, New York.

Frank C. Overton, senior vice president of Castle & Overton, Inc., importers of paper manufacturers' supplies of 200 Fifth avenue, New York, and widely known among paper manufacturers, was married on December 4 to Mrs. Jennie

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THERE is yet time to place a contract with Kalbfleisch for Chemicals for the next twelve months. You will be the gainer from advantages exclusive with contracts; additionally so, from features assured by the responsibility of Kalbfleisch and the high quality of these chemicals.

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A Kalbfleisch contract has added importance. It assures supplies of the highest standard of quality, uniformly so throughout the year. Shipments may be made upon a regular schedule, or requisitioned as required. And Kalbfleisch responsibility of a hundred years stands squarely back of every agreement in the contract.

Take advantage of ample manufacturing and distributing facilities, accurate control of all operations, and the close study and attention to individual requirements—from which all Kalbfleisch customers benefit.

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PAPER

There are twelve months' profits to enjoy from a contract with Kalbfleisch for 1930.

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KALBFLEISCH

H. Elting, of Queens, L. I., widow of Everett Elting, Jr., the ceremony being solemnized in the memorial chapel of the Central Congregational Church in Brooklyn, N. Y., with the Rev. Dr. S. Parkes Cadman officiating.

The Jessup & Moore Paper Company, of Philadelphia, has leased executive offices on the twenty-ninth floor of the new Lincoln Building now nearing completion on East Forty-second street across from the Grand Central Terminal in New York, and will shortly occupy the new office quarters.

Spencer J. Blake, formerly New York manager for W. C. Hamilton & Sons, is now associated with R. G. Benedict, eastern sales representative of the Beveridge Paper Company, of Indianapolis, Inc., at 299 Broadway, New York.

John J. Griffith, prominent paper mill supplies dealer specializing in handling old rope, and for many years located at the foot of Clinton street in Brooklyn, N. Y., has just completed a new concrete fireproof warehouse to replace his building destroyed by fire some months ago. The new plant has been completely equipped with the latest machinery.

The annual sales meeting of the New York division of the Rubberoid Company and associated groups, manufacturers of roofing and sheathing papers, was held in the Hotel Pennsylvania, New York, on December 17. It was the consensus of opinion of those attending the conference that roofing business will be unusually good in 1930, as money hitherto spent in speculation will now likely be devoted to building. The chairman of the meeting was F. J. Limroth, sales manager of the New York office. The principal speakers were Herbert Abraham, president of the Rubberoid Company, and H. C. Bonney, vice president.

D. Benedetto, Inc., among the foremost packers of papermakers' supplies in New York, has moved its offices to 518 Water street, New York, where its new packing plant is located.

❖ NORTHERN NEW YORK ❖

Coty Machine Co. Busy

The production schedule of the Coty Machine Co., of Watertown, is filled for many months to come and other large orders are expected soon, according to officials of the concern. One large order recently received is for complete bottoming equipment for the new bag plant of the Pillsbury Flour Mills Co. of Minneapolis at Wellsburg, W. Va. A second large order for a one-sixteenth barrel bottomer unit and for a double bottomer unit, designed to bottom both ends of pasted multi-wall bags in one operation at high speeds with automatic feeding, has been received from Bartlett Arkell, president of the Beechnut Packing Co. Mr. Arkell will install the machine in the plant of the Arkell & Smiths, a bag concern located in Canajoharie, N. Y., of which he is also president.

Besides the domestic demand many promising inquiries are coming in from foreign countries, including England, France, Germany, Italy, Russia, Mexico and Canada.

The common stock of the Taggart Paper and Bag Corporation, with mills in Watertown, Oswega, Herrings and Carthage, has been placed on a $1 basis by the board of directors. The quarterly dividend of 25 cents was payable on January 2 to stock of record of December 14. Officials of the corporation report a steady increase in earning power. During the first six months of the past year the earnings totalled approximately $1.25 and the year's report is expected to reach $2.50 per share. Prospects for 1930 are declared bright by officials of the organization.

St. Regis common stock, which was split up four for one a few months ago, was placed on a $1 dividend basis by the board of directors at the annual meeting. The quarterly dividend of 25 cents was payable on January 2 to stockholders of record of December 10. This represents an increase of about 33 1/3 per cent over of the yearly yield of $3 on the old stock. The directors also declared the regular $1.75 dividend on the preferred stock of record of December 10.

Newsprint Manufacture Resumed in I. P. Mills

Machines 1, 2, 3 and 4 of the Fort Edward mill of the International Paper Co. this morning started the manufacture of newsprint paper, by order from the New York office of the Company. Machines 5 and 6 recently went over to the manufacture of newsprint. Number 7 makes wrapping paper.

It is understood that the sudden decision of the company to shift back to the manufacture of newsprint will in no way affect the order of the company to start the manufacture of newsprint in its mills at South Glens Falls and Ticonderoga.

The South Glens Falls plant, it was learned from an official source at Glens Falls, will resume operations this month, after being closed down for two years. The plant will manufacture newsprint and the machinery is now being reconditioned. Employment will be furnished at least 100 men.

David A. Fleischman, general manager of the Taggart Paper & Bag Corporation, who directed operations of all bag manufacturing plants from the New York offices of the Carlisle industrial group, left January 1 to take charge of west coast operations for the Taggart and Bates concerns. His new headquarters are in Los Angeles where the Bates organization has a plant equipped with four paper machines and a bag plant of 30,000 bags capacity per day. He will be succeeded by Stanley H. Hangen who has been in charge of one of the cement bag plants of the company located at Nazareth, Pa.

The steamer Markland, being built in England this winter for the paper carrying trade on the St. Lawrence river, will make its appearance in the spring. The craft will be fitted with triple expansion engines of 2,000 indicated horsepower and three boilers for burning either coal or oil. To protect the paper rolls from being damaged during heavy weather the holds will be coiled with steel sparring covered with wood. At the ends special steel construction has been made to give vertical and horizontal surfaces for easy stowage of paper. The craft will be used principally in the carrying trade on the lower St. Lawrence.

Two Watertown men have been granted patents for devices used in the paper industry. Frank W. Aiken has received a patent for his invention of a burr for dressing pulp grindstones. The award recognizes two patentable features of the invention. The application was filed with the patent office in Washington on October 22, 1925. Charles W. Valentine has been awarded a patent for his invention of a machine for winding cloth or paper web materials on rolls, which embodies five claims. He applied for the grant on October 6, 1926. He has assigned his rights to the Bagley & Sewall Corporation of Watertown, manufacturers of paper machines.

Matthew J. Burns of Albany has been elected president of the International Brotherhood of Paper Makers, defeating Jeremiah T. Cary by a majority of 105. E. D. Kelley of Sault Ste. Marie was elected sixth vice president over Oscar Benoit of Shawnigan Falls, Que., by a majority of 800. Mr. Burns has been a member of the organization for the past 25 years. He served as international secretary for six years, and was candidate for the presidency in 1927 but was defeated by W. R. Smith, who is now completing four years as president.

F. L. Carlisle, president of the St. Regis Paper Co., chairman of the Niagara Hudson Power Corporation, and president of the F. L. Carlisle & Co., Inc., will be the guest of honor at the annual dinner of the St. Lawrence County Society at the Hotel Commodore January 16.

The West End Paper Co., Carthage, has purchased two Westinghouse sectional paper machine drives with carbon pile sectional regulators, to replace the belt drives formerly used.

Money to burn

There is a great difference between low-cost lubrication and low-cost lubricants. Low-cost lubrication is *effective lubrication*—reduced depreciation, economy in lubricant consumption and lower power costs. The use of anything less than the *one* effective lubricant for any given set of conditions is like burning money in the bearings. That's the risk of price buying.

Forget price. The effective lubricant may cost little or much—but it's by far the cheapest in the long run.

The Texas Company with its long experience as a manufacturer of a lubricant for every purpose has been remarkably successful in helping executives to a better understanding of lubrication. Texaco Lubrication Engineers are specialists. Their services are recognized as essential. Their work in the interest of better lubrication has saved hundreds of thousands of dollars.

Write The Texas Company about your lubricating problems. One of our engineers will gladly go over your plant and study your conditions. His recommendations should prove valuable.

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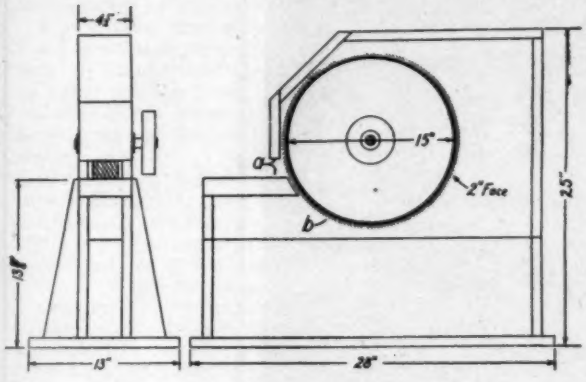
Practical Helps for the Mill Man

Pulp Disintegrator for Laboratories

THE Forest Products Laboratory has developed and has used for sometime a mechanical "fluffer" shown in the accompanying picture, for disintegrating pulp stock to be used in viscosity, copper number, and other physical and chemical determinations calling for uniformity of particle size and maximum exposure of surface.

The essential part of the fluffer is the carding wheel—a wooden disk on which is mounted a section of 2-inch carding



belt (b) of a type available commercially in several wire sizes—which is operated at 1,250 revolutions per minute. One or more thicknesses of the material to be fluffed is fed to the carding wheel by pushing it under a vertical wooden slide that partially closes the wooden housing at (a). The slide serves to hold the material together in case there are several plies. The fluff is collected in a drawer or bin at the bottom of the housing.

The chief characteristic of pulp stock or similar material processed in the machine shown here is the uniformity in the size of the particles. As the results obtained in many cellulose determinations, both chemical and physical, vary with particle size, it is apparent that the carding process is superior to the methods commonly used for the same purpose. This fact has been substantiated by many chemical determinations on check samples.

Charles Piez Elected President A. S. M. E.

At the annual meeting of the American Society of Mechanical Engineers held in New York City on December 3rd, Charles Piez, chairman of the board, Link-Belt Company, Chicago, began his term as president of the association—the largest engineering organization in the world.

Following his graduation as a mining engineer Mr. Piez entered the employ of the Link-Belt Engineering Company in Philadelphia, as an engineer draftsman, and in 1906 was elected president of a consolidated organization of the three related companies, the Link-Belt Machinery Company, the Ewart Manufacturing Company and the Link-Belt Engineering Company. The consolidated corporation, thereafter known as the Link-Belt Company, has become widely known under Mr. Piez's management as an efficiently operated and successful engineering and manufacturing enterprise. In 1924 he was made chairman of the board, with full executive control of the company.

Mr. Piez has made a remarkable record as an organizer and manager of industry. He served two terms as president of the Illinois Manufacturers Association and has been instrumental in framing much of the labor legislation of the State of Illinois.

Fourth Reduction in Telephone Rates

Another reduction in long distance telephone rates of the American Telephone & Telegraph Company became effective January 1. It is estimated that the new schedules will result in an annual saving to the public of more than $5,000,000.

Approximately 45,000,000 calls a year, the majority of them interstate, will be affected by the change in rates. Most station-to-station daytime calls between points 60 to 300 miles apart will be lower. The overtime rates on person-to-person messages of more than ten chargeable minutes are reduced and the report charges on practically all calls between 100 and 2,200 miles have been cut substantially.

This is the fourth reduction in long distance rates that the American Telephone and Telegraph Company and its associated companies have made in less than three and a half years. It is in accordance with the system's policy of furnishing service at the least cost consistent with financial safety. The last previous reduction went into effect February 1, 1929, producing a saving to telephone users of about $5,000,000 annually.

The rapid increase in the use of toll service which characterized 1928 continued during 1929. Improvement of equipment and operating methods have resulted in a material speeding up of service so that at present about 95 per cent of all toll and long distance calls are handled while the calling party remains at the telephone, as compared with 90 per cent at the beginning of 1928 and 70 per cent in 1925.

Hercules Will Sell on Net Weight Basis

Following investigations at its naval stores plants during the past year, Hercules Powder Co., Wilmington, Del., announces its readiness to supply, for the first time, wood rosin in wooden barrels on a net weight basis. This marketing innovation is expected to effect decided savings for the rosin consuming industry.

The net weight sales plan is instituted by Hercules in response to the desire by consumers for such action. Committees of rosin consumers, representing leading trade associations, have urged the sale of rosin on a net weight basis and the reduction of tares to a minimum.

The sale of rosin in wooden barrels on a net weight basis enables the company to furnish a package consisting of less wood and more rosin. As a result of this development, consumers will eventually realize considerable savings in freight.

Since the new marketing method pioneered by the Hercules company is novel in the history of the industry, rosin consumers are expected to assist in the ultimate development of the most practical shipping package, still further promoting the economies of the system.

The Brown Instrument Co, Philadelphia, Pa., has appointed as its chief engineer, E. B. Nichols, well-known for his previous connections, and his activities in the A. S. M. E. Mr. Nichols, who is a graduate of North Carolina State College, was at one time chief engineer of the Pfaudler Company, Rochester, N. Y., subsequently holding the position of chief engineer of the Victor Talking Machine Co., Camden, N. J. Later he became associated with the Bell Telephone Laboratories, which connection he severed to join The Brown Instrument Company organization.

Paulson Barking Drum

This Company has been actuated by one undeviating incentive in designing and building Paper Mill Equipment: To design and build as finely as can be done; to spare no time—no care; to eliminate the element of chance from even the smallest part; to know that Manitowoc Paper Mill Equipment is as nearly perfect as is humanly possible.

Write for full information.

Designers and builders of —

Barking Drums	Incinerators
Sulphite Digesters	Disc Evaporators
Experimental Digesters	Air Nozzles
Globe Rotary Digesters	Diffuser Tanks and Swing Pipes
Cylindrical Digesters	Bleach and Clay Mixers
Rotary Lime Kilns	Rod Mills

Moore Crawler Speedcranes, Shovels, Draglines and Trenchoes

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ADVERTISING PAGES REMOVED

◆ NEW ENGLAND ◆

Plans for Bucksport Mill Under Way

The Maine Seaboard Paper Co., which is to build the new mill at Bucksport, Me., has concluded a deal with the Machais Lumber Co., of Machais, Me., by which it will acquire some 115,000 acres of pulpwood timberland in Washington county, Me. The holdings extend 40 miles up the Machais river and are well covered with spruce, hemlock and pine, besides some hardwoods. Another important tract in Washington county acquired by the Bucksport interests is the timberland of the Sullivan family of Whitneyville, which is said to aggregate some 55,000 acres which are adjacent to those of the Machais Lumber Co. Even these two huge deals however provide for only half the Maine timberland which the new company has purchased in Maine. For the Sullivan land the Bucksport interests are said to have paid over a half million dollars.

It is reported that oil will probably be burned in the power plant of the new plant. The boiler plant will be provided with both oil burning and coal burning equipment, the latter to be either powdered coal or stokered. As oil is low at present, the company is endeavoring to place a long term, preferably a five-year contract on oil which it is in a position to take by water.

Rice, Barton & Fales of Worcester, Mass. were awarded orders during the last week in December for two paper machines for the new plant. The order with incidental equipment is said to aggregate a million dollars in value and is considered one of the largest single orders for material ever given a Worcester industrial company. Each machine will weigh approximately 2,500,000 pounds.

The definite knowledge that the new mill will arise at Bucksport has created a land boom in the little Maine town. The Blodgett Tannery site which was bought for the new plant cost the sponsors $200,000 and town lots have tripled and quadrupled in value.

It comes to light that one of the big factors in making Bucksport attractive to the newcomers was the assurance obtained at a town meeting that Bucksport would exempt from taxation over $10,000 any industrial plant which would employ at least 250 persons.

The Paper House of New England, 71 Lyman street, Springfield, Mass., has moved to 42 Hampden street where 7,500 square feet of office space and warehouse room have been leased. Charles Charnella is treasurer and general manager and W. N. Stetson, Jr., of Storrs & Bement Co., Boston is president.

Although the Great Northern Paper Co., is still selling some of the Mitcherlich sulphite pulp made at its Madison, Me., mill, the bulk of the excess sulphite there is now used in sulphite specialties. The mill has been revamped for that purpose with new beater installations and other equipment to provide for this change. Over 100 tons of newsprint are also produced daily at this mill.

Willard E. Swift has succeeded James Logan as president of the United States Envelope Co., as a result of the action of the directors on the 19th of December. Mr. Swift will continue as chairman of the executive committee. He is 50 years of age and began service with the company as a mechanical engineer and has done much to develop machinery used in envelope manufacture. Eldon V. Johnson, former third vice president, has been elevated to first vice presidency and also becomes general manager of the company. Robert L. Allison, sales manager, becomes third vice president, also retaining his post as head of sales. William Day, treasurer, became a member of the executive committee, while E. M. Whitcomb continues as second vice president.

Mill supplies, with the exception of bituminous coal, received a sharp setback during the past month in the Boston market. The leading buyers of old rope in this section, which includes the largest consumer in the country cut their high bid on foreign rope from 4.50 to 4.25 ex dock. A few mills are still paying 4.40. Mine run West Virginia coal was strong at $5.75 on cars. Boston and nut and slack for stokered power plants was available at $5.50.

New England paper mills have been well served by china clay boats during the past month despite the loss at sea of the S. S. Volumnia bound to Boston with 8,000 tons of china clay consigned to the English China Clay Sales Corporation. To offset this loss the importers in question had four vessels for New England ports; included in these was the S. S. Kelvinia which arrived at Fowey on the 28th to load 9,000 tons, the largest cargo it is claimed ever loaded out of the famous British clay shipping port. The same company had 6,200 tons on the Tynebridge which sailed the 15th for Portland, 7,500 tons for Portland and Philadelphia which sailed the 17th and 8,300 tons for Portland on the Cape York which had been forced to put back to Falmouth because of bad weather. She sailed again on the 23rd or thereabouts.

William F. Whiting, president of the Whiting Paper Co., of Holyoke and Secretary of Commerce under President Coolidge, has been elected a director of the First National Bank of Boston which has recently absorbed the Old Colony Trust Co., making it nearly three times as large as any financial institution in New England.

Orono and Eastern Merge

Directors of Orono Pulp & Paper Co., have voted to approve the merger with the Eastern Manufacturing Co., of Bangor and Brewer, Me., and Orono's stockholders put their further seal of approval upon the matter by ratifying action of the stockholders at a special meeting on the last day of 1929. The character of the product of both mills will remain the same according to presidents Graham of Eastern and Bragg of Orono.

Eastern Manufacturing Co., was founded in 1889 and has been in continuous operation since that time. It is employing 1,500, and has followed a program of almost continuous expansion since the present Maine management took over the reins in January, 1928. Some $300,000 was spent in that year and over a million in 1929 for new plant and equipment including many new beaters and refining engines. The company is now in a position to benefit by the most modern contrivances that paper mill engineering can offer, and expects to net some $900,000 operating profit this year allowing for depreciation, interest and other charges. This was on a gross business of around 6½ to 7 millions.

The list of company officials of the merged concern has not been made public. Both concerns enjoy valuable water rights especially Orono which also has a very large unbleached sulphite production that will be of great value to the combined concern.

The first of what will constitute a test sailing took place January 1st when the S. S. Algic sailed for Buenos Aires and other South American ports from Portland, Me. She carried 40 carloads of Canadian newsprint on this the first voyage of what is hoped will be a regular steamship service guaranteed by paper and lumber cargo from the Maine port to South America. These vessels will carry part return cargoes to Portland of casein for Maine paper mills. The paper shipment amounted to 1,000 gross tons. C. H. Sprague & Son of Boston, operators of the American Republics line, are sponsors of the new service.

The Continental Paper & Bag Co.'s mill at Rumford, Me., is again to manufacture newsprint the production of which was discontinued some five years ago. Three machines have been started.

Paper Mills in general were strongly opposed to the plans of the Interstate Commerce Commission for regional consolidation of railroads in so far as it affected New England. The desire of most large paper shippers is for a unified New England system excluding only the Canadian owned lines and

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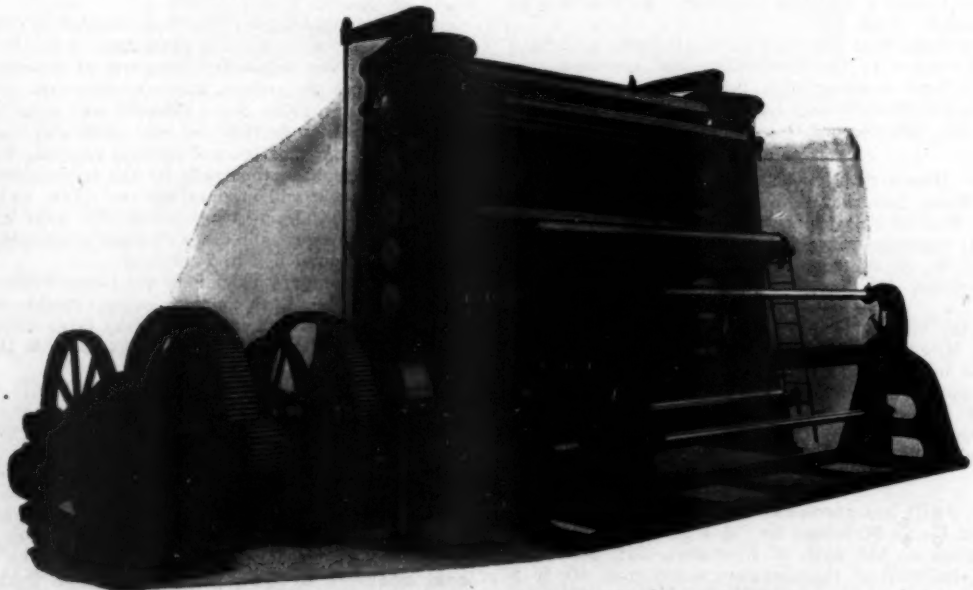
Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.



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the New York Central's Boston & Albany. In this way, the advantage of competitive bidding by trunk lines for New England's business can be continued, with the Canadian differential gateways available as alternates to standard rail routes to the West. At present, a solid paper train moves to the middle west from Maine and New Hampshire points over the Canadian National Railways, every day.

Dennison Manufacturing Co., one of the largest New England converters of paper, commenting on business conditions states that business has entered a period of lessened activity which they believe will continue for some months. They state that they are operating at 80 per cent of capacity, and that their raw materials are being purchased on a hand to mouth basis. They do not expect any change in the labor and wage situation in the paper industry. Customers are ordering conservatively, but cancellations have not been excessive, in fact, no more than usual.

Carter, Rice & Co., Boston paper merchants, have obtained the exclusive rights in that section for the distribution of the Groves paper weight scale, built on a slide rule principle by which weights of any type of paper except paperboard can be obtained on any size and for any amount. It is a typical lightning calculator applied to paper.

John K. Judd, president of the Judd Paper Co., of Holyoke, New England distributors died December 23rd at his home in Holyoke, at the age of 79 years.

Low water caused the closing of the International Paper Co.'s plant at Franklin, N. H., for a period during December. The water in New England rivers despite a few storms, has continued abnormally low and requires extra precautions at many places to insure cleanliness.

Among New England Paper Companies who have benefited by the recent federal tax refund are: S. D. Warren Co., Holyoke, who received $139,000; L. L. Brown Paper Co., Adams, $9,087; Franklin Paper Co., Holyoke, $18,227; Contoocook Valley Paper Co., division of Monadnock Paper Mills, Bennington, N. H., $1,117; and Groveton Paper Co., Groveton, N. H., $1,499.

Hugh J. Chisholm, president and general manager of the Oxford Paper Co., is active in behalf of Rumford, Me., where his mills are located, in seeking a new hotel for that city.

Tileston & Hollingsworth Co., established a production record at the Hyde Park, Boston, mills during November, according to a company announcement. The company has installed a telephone typewriter system between the main office in Boston and the mill. Orders taken immediately record themselves at the plant.

Safepack Mills, Inc., Millis, Mass., converters of waterproof and general building and wrapping papers, are building a 150x250 foot one-story building to expand their output.

George F. Fowler, president and treasurer of the Valley Paper Co., Holyoke, Mass., and founder and president of the Hampden Glazed Paper & Card Co., died December 11th at his home in Agawam. He founded the latter concern with Aaron Bagg forty-five years ago. He is survived by his wife, his daughter who is Mrs. William Whiting, two sons George B., and Edward H. Fowler. He was active in promoting charitable works in his city and was highly regarded in the papermaking community.

Paperboard mills in New England are developing to a greater degree than ever the practice of shipping paperboard by truck to box factories, allowing the carload rate of freight and adding to the delivered price only such difference between the carload freight and the trucking cost as may exist. In many cases such as those where a box factory has no siding, the delivered cost is less than when the board is trucked by the consumer from the freight station in his city or town. Paperboard manufacturers outside New England and selling in this territory are meeting the practice of the local manufacturers by consigning cars to merchants, who split the tonnage among several factories and truck, allowing also the carload rate of freight and adding only what the actual trucking costs. The tremendous increase in small orders during the past year is responsible.

S. D. Warren Co., will handle its own pulpwood next year from Nova Scotia through Portland, Me., at the Bancroft and Martin wharf. Five paper companies are now bringing Canadian wood through Portland—International Paper Co., Oxford Paper Co., Parker Young Co., Warren, and Hollingsworth & Whitney Co.

Karl Scates Succeeds Martin Brown

Karl D. Scates has been elected general manager of the Parker Young Co., paper and pulp manufacturers of Lincoln and Livermore Falls, N. H., with general offices in the Board of Trade Building, Boston. Mr. Scates has long been regarded as the right hand man of Martin Brown, former treasurer and general manager, who has resigned from the company on account of ill health. Mr. Scates is a native of Maine, 42 years of age, and a graduate of Bowdoin where he later taught chemistry. He joined the Parker Young Co. in 1911. His principal connection has been with the Woodstock Lumber Co., a subsidiary, but he is familiar with the paper end of the business.

H. C. Cummings, of Richmond, Vt., is president of the company; Mr. Scates, general manager; D. A. Beaton, treasurer; and F. E. Plumley, former secretary to Mr. Brown, assistant treasurer. Mr. Scates is also president and general manager of the Woodstock Lumber Co.

John Boyle probably the record holder for continuous services with any house connected with the paper trade died Christmas day in his 81st year after 60 years of continuous services as a salesman for Storrs & Bement Co., leading Boston paper merchants.

The Atlantic Transportation Co.'s vessel, Philip T. Dodge, which has been transporting newsprint from the International Paper Co.'s mills at Three Rivers, Quebec to London for the London Daily Express, carrying about 4,000 tons of cargo each voyage, missed her last cargo because of a storm which prolonged return voyage from London, and is now in Boston for repairs.

Rates on rosin size from Waterbury, Conn., to points in northern New England attacked by Kalbfleisch in the interests of their customers, and their plant in Connecticut, seem destined for some revision according to preliminary reports from the I.C.C. The present rates on a class basis are called excessive compared to other existing commodity rates on rosin size within New England.

Fifth class rates on paper winding cores have been established on less carload shipments of that commodity from New York City to mills of the Great Northern Paper Co., St. Croix Paper Co., Pejepscot Paper Co., and Cushnoc Paper Corp. The new rates are the result of a successful action brought by shippers before the I.C.C.

Connecticut Valley Supers Name Officers

At the December meeting of The Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association, held in Holyoke, Mass., officers were elected to serve during the ensuing year, as follows: Chairman—Matthew V. Horgan, Holyoke, Mass.; vice chairman—Lewis E. Weiser, New Haven, Conn.; A. B. C. Drew, New Bedford, Mass.; Joseph A. Moses, Fitchburg, Mass.; secretary-treasurer—George W. Reardon, Holyoke, Mass.

The officers named are to constitute the Board of Governors, with additional members to be appointed by the chairman, who was also authorized to name the chairman of the board.

John J. White, Holyoke, was named chairman of the board

Back of every Appleton Felt stands the symbol of quality and service . . . the symbol of an experienced organization, trained to make only a quality product . . . the symbol of a plant control that checks and re-checks every manufacturing operation to assure only the highest product . . . some reasons why Appleton Felts and Jackets are preferred by mills throughout the country—continuously year after year. Why not apply this service to the solution of your felt problems?

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by the chairman and the additional members will be named at a later date. It was voted to hold the next meeting at New Haven, on invitation of "Si" Weiser.

Ray Hudson Now with New England Council

On January 1st, Ray M. Hudson, formerly assistant director of the National Bureau of Standards, became secretary of the Massachusetts Division of the New England Council, with headquarters in Boston, Mass.

Since his graduation from Syracuse University in 1908, Mr. Hudson has devoted his best efforts to the study of simplification, standardization and scientific management methods, and to-day is recognized nationally as an authority on the elimination of industrial waste.

ENGLAND

Report on Paper Trade Conditions

The year is closing quietly in the paper industry, and the merchant section is beginning to settle down after its usual seasonal rush. Demand has slackened slightly during the last month or so, particularly in the woodfree section, where demand is insufficient to provide work for all the mills. There is at present an unreasonably close margin between cost and charge. An agreed scale of advanced prices for all woodfree papers has been suggested in more than one direction.

Esparto prices remain unchanged since the farthing advance was made. Quotations for African and Spanish grasses show no signs of reduction. Here again, the makers think that the prices charged for the finished product is inadequate, although it is realized that a further increase is practically impossible. The home market for this section continues to grow, and schemes are afoot for creating greater sales. It has been pointed out, however, that no lasting benefit will accrue to the paper industry as a whole if increased production of esparto papers is achieved at the expense of woodfree and other makes of papers, and that real progress can only be made in four directions: the supplanting of foreign import; Empire development; overseas trade; and the creations of fresh demands within the home market.

Paper Agents and Manufacturers Discuss Duty—Speeches at the annual dinner of the Paper Agents' Association seem to point to the fact that the safeguarding duties on paper will not be continued very much longer. The objects of this association are to further the interests of all those who are the accredited agents representing colonial and foreign paper and board manufacturers. The chairman, referring to this duty, said that they would not be satisfied until they had wiped out the duty that was imposed on packing and wrapping papers they all felt that it was not a just duty, nor was it obtained under fair means, and they would not rest until the statute book was free of it.

On the other hand, one hears discontented statements from the manufacturers' side of the fence. The demand for paper of all kinds is great and ever increasing, one member of the trade recently pointed out, but the possible output from British mills is not sufficient to meet this demand. There are very few of the mills, however, that are turning out 100 per cent of their possible output, except perhaps those that make newsprint and have an assured market. A large proportion of what is made is being sold at prices that barely cover the cost. "Those who study import statistics," another reviewer of the situation says, "will naturally jump to the conclusion that the sole cause of the trouble is that so much foreign paper is imported at lower prices than those at which similar paper coming from British mills is sold. This is true only so far as statistics can teach us. It is quite true that the large quantity of foreign paper imported for home consumption so fills the market that there is not sufficient demand for the British-made paper to keep the existing mills going full time. Makers and others are beginning to inquire if there is any reason other than selling price why this should be and why they should have to sell so large a proportion of their output at an unrenumerative figure."

It is further pointed out that British paper can compare favorably with that made by any country, and that in many respects it is superior and is generally acknowledged by users to be more suitable for the purpose for which it is wanted than imported paper of similar character. In the past ten years, the writer goes on to point out, they have spent fabulous sums on new machinery and buildings and on every form of improvement which could make their mills more up-to-date. During this same period imports of paper have increased considerably, so that they are now nearly double the tonnage of what they were in the days before the war. Without a doubt it is the presence of this huge tonnage of foreign paper on the market that is the direct cause of the trouble, and, knowing this, there are naturally many who say that the only solution of the difficulty is to put a prohibitive duty on all foreign paper, and thus prevent it from spoiling the market for British made paper.

The annual consumption of newsprint paper, according to the latest published returns, was at the rate of about 900,000 tons per year, and of this 600,000 tons, or two-thirds, is home produced. This being so, it would appear that of all other kinds of paper, including wrapping and strawboards, the quantity of foreign paper consumed must be greater than that of the home product. The tonnage of strawboards and wrappings reckoned together is about equivalent to the total of printings and writings. Of strawboards it would safe to say that the comparative consumption of foreign and British would be as three to one in favor of the foreign boards. In many directions there are those who do not even know that it is possible to get a British-made strawboard. For some reason or other, best known to the makers, the British strawboards are of a greyish color, whereas the Dutch and Scandinavian are of a distinctly yellow shade, and this difference in color, though in no way affecting the boards themselves, has a lot to do with their selling popularity.

Discover Plant to Produce Paper and Artificial Wool—Paper is one of the products which it is claimed can be manufactured from a vegetable fiber found in Africa by M. Lienard Fievet, who has discovered a way of using it for the production of artificial wool. He proposes to insert natural wool into the plant, the stalk of which, when grown, can be used for the manufacture of artificial wool, while the head and roots can be employed for the manufacture of paper. The plant is found in the African bush on the banks of rivers, and a company formed to exploit the wool process possesses 65,000 hectares of land in French Guinea.

Inveresk Paper Co. Insolvent

The resignation of William Harrison, chairman of all of the companies known as the Inveresk Group, has been announced. Mr. Harrison retains a seat on the boards as a director.

A committee of preference shareholders in the Inveresk Paper Co., Ltd., headed by Viscount St. Davids, in a published statement, declare that indebtedness to bankers and others has been incurred by the Inveresk Co. to an amount which they believe to exceed 2,500,000 pounds.

B. H. Binder, F. C. A., who has been acting as financial consultant to the Iveresk Company, becomes chairman pro tem of that company and of the Daily Chronical Investment Corporation, United Newspapers, Ltd., and Provincial Newspapers, Ltd.

William Graham, formerly vice chairman of Illustrated Newspapers, Ltd. (the "Great Eight") becomes chairman of that company.

Alec S. Field, formerly with the Shell Petroleum Corporation, Dallas, Texas, in charge of the Eastern Division, has resigned his position to go with the Naylor Pipe Company as Assistant Director of Sales. Mr. Field received his early oil field training with the Standard Oil Company of Louisiana and was one of the first of the new generation of engineers entering production work. He has been chairman of the Southwestern Division of the Development and Production Engineering of the American Petroleum Institute for the past year and is widely known among this group in the petroleum industry.

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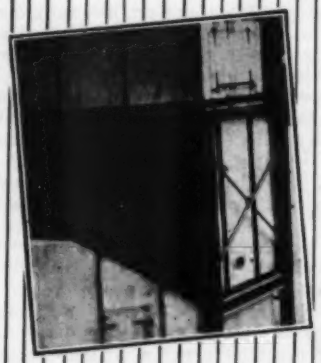
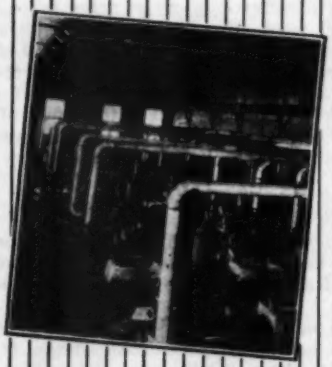


Above—Briner Economizer for utilizing the heat from waste vapor.

Below—Ross Grinder Exhaust System removing vapor from grinders.



DURING the past few years, exceptional progress has been made by the paper industry in the utilization of waste heat. As a result, thousands of dollars annually are being lopped from operating costs. Savings through the reclamation of heat from the waste vapor are providing the necessary increased margins to insure production that is profitable.

Among the many Ross Systems that are so largely contributing to this progress in the utilization of waste heat, the Ross Briner Economizer and Ross Grinder Exhaust System are conspicuously prominent. They have become regular equipment in those mills that seek to benefit from the advantage of the lower operating costs that they assure.

These systems accomplish not only the full utilization of waste heat, but improve production and operating conditions. Installations are proving paying investments. Operating cost records consistently prove that it costs more to be without them than to install them.

Bulletins Describing These Ross Systems Will be Promptly Sent to You Upon Request

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Canadian News

Further Increase in Demand for Newsprint

Following upon a very favorable report issued by the News Print Service Bureau for October, the November figures for newsprint production in Canada are even more favorable. Total output of Canadian mills was 252,046 tons, or slightly over the October output of 251,914 tons, in spite of the latter being a longer working month. As in October, shipments from the mills were well ahead of production, amounting in November to 253,219 tons.

The ratio of production to installed capacity was higher in November than in the previous month, amounting to 91.2 per cent, the second time this year that this ratio has risen above 90 per cent. The ratio for October was 88.8 per cent.

Increase in Price of Canadian Newsprint

The long-anticipated action regarding an increase in the price of newsprint has come at last with the definite announcement by the St. Maurice Valley Paper Co., of an increase of $5 per ton on 1930 contracts, less $5 per ton for the first six months of 1930 on three-year contracts. The company is the selling organization for Canada Power and Paper Corp., which controls over 20 per cent of the total Canadian output of newsprint, including the output of Belgo, Laurentide, St. Maurice Paper, Port Alfred and Wayagamack mills, which totals 2,000 tons a day. Several of the other leading Canadian companies, including Abitibi, Price Bros. and Backus-Brooks mills, are understood to have followed the same line action, so that approximately 60 per cent of the Canadian output is already placed on the new basis. The other Canadian companies have not yet announced their 1930 price.

International Paper has advised its customers that the present price of $55.20 a ton would remain unchanged for the first six months of 1930, and that no change will be made after that date without giving a notice of at least thirty days.

The announcement of the increase aroused a storm of protest from United States publishers, and meetings of the American Newspaper Publishers' Association were held to deal with the matter. It was claimed that the newsprint manufacturers had been virtually coerced by the Quebec and Ontario premiers in defiance of the law of supply and demand, as the present capacity of Canadian news mills is considerably greater than the demand. It was also stated that the action of the manufacturers constituted a combine in restraint of trade, and it was suggested that the matter be placed before the authorities at Washington to be dealt with under the anti-trust laws; a few even went so far as to hint that retaliatory measures should be taken against Canada. A more moderate suggestion was that United States newspapers should curtail their consumption of newsprint in protest.

The attitude of their American customers does not appear to worry the Canadian producers. Three years ago the newspapers in the United States were paying $70 to $75 for Canadian newsprint, and were making no complaints. They are now in better position to pay the new price than they were then to pay a price that was $10 higher than the newly-announced 1930 price, as they have larger circulations, more advertising and more income than they then had. Moreover, a survey carried out by the Association of National Advertisers as to the probable amount of advertising to be used in 1930 indicated with pretty fair certainty that there will be an increase of at least 11 per cent. The publishers would therefore be the first to suffer by the suggested curtailing of paper consumption.

As far as the Canadian Daily Newspaper Association is concerned, while it has been made to appear that this association is following the lead of the American association, the fact is that the newspapers of Canada do not consider that an increase in the price of newsprint is unwarranted, and many of them have come out in frank approval of such a move. The only concern of these newspapers for the moment appears to be to insure that they are not charged a higher price for their paper than is charged to American publishers.

Representatives of the publishers and paper manufacturers have entered into conference, and it is hoped that the whole controversy will be finally settled by the manufacturers proving to the publishers that the 1929 price did not give an adequate return on the capital invested in Canadian pulp and paper mills.

Printers Ask Reduction in Price of Book Paper

Active measures are being taken by the Canadian printing trade to bring about a reduction in book paper prices. For sometime past there has been a wide difference of opinion as to what constitutes a reasonable price. The printing trade claims that it is unfairly handicapped by the cost of book paper in Canada as it permits competition from American printers, who are able to get their paper at a cheaper rate. On the other hand, Canadian book paper mills claim they need a greater volume of production to meet foreign prices. It is claimed that the paper mills have not met the potential Canadian demand, in that though claiming to have adequate manufacturing facilities to fill the total requirements of the Canadian printing and publishing industry, they have permitted the importation of $1,052,028 of book and fine papers in one year. Printers say that apparently the mills are determined to persist in their harmful policy. Figures for the six months ending September, 1929, are quoted, showing an increase of 69 per cent in imports over the corresponding period of 1928. Importations subject to drawback decreased, but the volume of paper on which full duty was paid increased tremendously.

The Federal Department of the Interior has confirmed the estimate by Sir George Courthope in the British House of Commons that Canada's forest resources, at the present rate of depletion, will not last more than 30 years. Canada's major problem, the Department declared, was the introduction of more conservative methods of handling forest lands rather than reforestation; but the latter is not being disregarded and is being carried on in districts where lands have been entirely denuded. An educational campaign to save and extend the life of the country's timber supply is also being conducted, and a general improvement in this direction has been noted.

The old-fashioned hemp bags have been finally relegated into the discard by the Canada Cement Co., the largest cement-manufacturing concern in Canada. The paper bags, made of five-ply kraft, have been tried out over a long period and have been found far superior in every way to the hemp bags.

Branch Plant Becomes Canadian

Another former United States concern has come under complete Canadian control through the sale by Carthage Machine Company, of its interests in the Carthage Machine Company of Canada Ltd., Belleville, Ontario, to R. G. Graham, who is now its president. A. K. Hinds, previously head of both companies, has also sold his interest and resigned as president and director of the Canadian company.

Other officers of the Canadian company are: H. W. Ackerman, vice-president and F. S. Wilson, secretary-treasurer. W. R. Tidmarsh is manager of the large and well-equipped plant at Belleville.

Paul Bunyan, fabled hero of stupendous tasks in "The Great Woods", might well consider his labor complete when the pulp wood reaches the mill.

Here Norton Pulp Stone takes up the work, producing pulp with uniformity of fibre and regularity of production—a giant in actual accomplishment.

NORTON COMPANY
WORCESTER, MASS.

Canadian trade now supplied from Canadian plant

Grinding Wheels
Grinding Machines

NORTON
PULP STONES

Refractories - Floor
and Stair Tiles

Program of the Seventeenth Annual Meeting of the Technical Section, Canadian Pulp & Paper Association

To be Held in Montreal, January 29 and 30, 1930

MEMBERS of the Technical Section, Canadian Pulp and Paper Association are advised that the Seventeenth Annual Meeting of the Section will be held in the Meeting Hall of the Engineering Institute of Canada, 2050 Mansfield street, Montreal, on Wednesday and Thursday, January 29th and 30th, 1930, beginning at 10 o'clock on the morning of the first-named day.

Registration Headquarters will be opened at the above address at 9 a. m. on the 29th. Each member registering will be provided with an identification card which it will be necessary to present to secure admission to the meetings, **which will be restricted to members only.** A registration fee will be collected, which will include tickets of admission to the Annual Luncheon and the Annual Dinner on Thursday for those who desire them.

The I. H. Weldon Medal—Members are reminded that the I. H. Weldon Gold Medal, donated by Mr. A. L. Dawe, is to be awarded for the best paper submitted to the annual meeting. While no place on the program has been allotted to formal papers this year, any such papers offered by members will be read by title, or otherwise, as the limits of time may prescribe, and will be printed in the official proceedings. The award is to be made by the Executive Council.

Election of Officers—Under the By-laws the officers to be elected this year are a chairman and two members of the Executive Council to succeed Messrs. H. J. Buncke, Abitibi Power and Paper Company, Limited, Iroquois Falls, Ont., and John Stadler, Consulting Engineer, Montreal, who retire by virtue of the seniority rule. The chairman has appointed the following Committee on Nominations: Messrs. George Carruthers, Interlake Tissue Mills, Limited, 74 University avenue, Toronto, Ont.; Prof. H. O. Keay, Canada Power and Paper Corporation (Laurentide Division), Grand Mere, Que.; O. F. Bryant, Nashwaak Pulp and Paper Company, Limited, St. John, N. B. Suggestions as to nominees may be sent to any member of the committee.

Social Functions—The Annual Luncheon will be given at the Ritz-Carlton Hotel at 1 p. m. on Thursday. At this luncheon Mr. R. S. Kellogg, Secretary of the Newsprint Service Bureau of New York, will give an address which promises to be of unusual interest to members. Mr. Kellogg spends the greater part of each summer visiting paper mills in the United States and Canada. There are few establishments of any importance that he has not seen and thoroughly inspected. His address will have to do with some "Opportunities in the Paper Industry at Present Overlooked by Our Technical Men."

The Annual Dinner will be given at the Ritz-Carlton Hotel on Thursday evening, January 30th, beginning at 7 o'clock. A program of entertainment will be provided. There will be no speeches. The attendance will be limited and over-crowding avoided.

PROGRAM

WEDNESDAY, JANUARY 29th

Following the formal opening of the Seventeenth Annual Meeting and the usual business proceedings, there will be a discussion on the "Control of Grinder Operation in the Manufacture of Groundwood," under the direction of Mr. D. L. McLeod. Among the points to be brought up for consideration will be the following:—

1. Grinder Temperature and Consistency.
2. Stone Surface and Burrs.
3. Speed.
4. Pressure.
5. Power Input.
6. Grinding Area.
7. Make of Stone (Natural or Artificial),

and any other operating variables which any of the members may desire to put forward.

The discussion, which is entirely informal and open to all, will be led by the following members who have consented to take part:—

MR. B. C. BROWN
International Paper Company.
MR. GEO. BALKO
Canada Power and Paper Corporation.
MR. A. E. PARRETT
Ste. Anne Paper Company.
MR. F. H. ANDREWS
Canada Power and Paper Corporation.
MR. L. E. KENDALL
Abitibi Power and Paper Company.
MR. D. L. MCLEOD
Price Brothers and Company, Limited.

All members interested in the subject are requested to make an effort to attend, since this discussion is intended to act not only as a medium of exchange of information among the members, but to summarize the present state of knowledge of the process for the benefit of the Research Institute.

Following the discussion, a paper on "Automatic Weighing of Wood" will be presented by Mr. J. O. Mason, of the Canada Power and Paper Corporation (Laurentide Division).

The presentation of additional papers which may be offered will depend upon the time available.

THURSDAY, JANUARY 30th

On Thursday, the second day of the meeting, a discussion will take place on "Manufacturing Control of Sulphite Pulp," under the direction of Mr. O. F. Bryant. As in the case of the discussion on groundwood, all members are invited to participate. The subject has been sub-divided into several topics, and leaders have been assigned as follows:—

Advantages of Slow and Quick Cooking:

R. N. MILLER
Oxford Paper Company.
L. C. KELLEY
Fraser Companies, Limited.

Use of Hot Liquor Recovery versus Liquor Recovery in Acid Tanks:

D. W. AMBRIDGE
Anglo-Canadian Pulp and Paper Company
DR. J. S. BATES
Price Brothers and Company, Limited.

High versus Low SO_2:

R. B. WOLF
Pulp Bleaching Corporation, 200 Fifth ave., New York.
P. A. PAULSON
Kimberley-Clark Corporation, Neenah, Wis.

Use of Circulating System:

ENOCH LINDBOM
Chandler, P.W.
R. W. HOVEY
Oxford Paper Company.

Use of Chrome-Nickel-Iron Alloys:

F. L. MITCHELL
Abitibi Power and Paper Company, Limited.
W. G. CUTTLE
Ste. Anne Paper Company, Limited, Beaupre, Que.

At the conclusion of the second day's program the Committee on Nominations will report, and a vote will be taken on the proposed amendments to the By-laws.

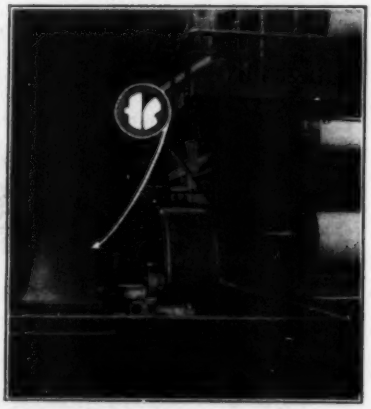
Harness Your Power *with* MORSE *SILENT CHAINS*

You have power to harness and put to work on waiting machines. How are you going to do it to get the most efficient performance and dollar-for-dollar value in work done, lowered maintenance cost and dependable operation?

MORSE Silent Chains will answer your power transmission problems for you better than any other form of mechanical drive. They deliver 98.6% of the power to the point of use, at a positive speed ratio between driving and driven shafts. They are flexible, quiet at high speeds, unfailingly dependable in performance over long periods of time. And they are reliable, long-lived, and cheaper to maintain *all* the time.

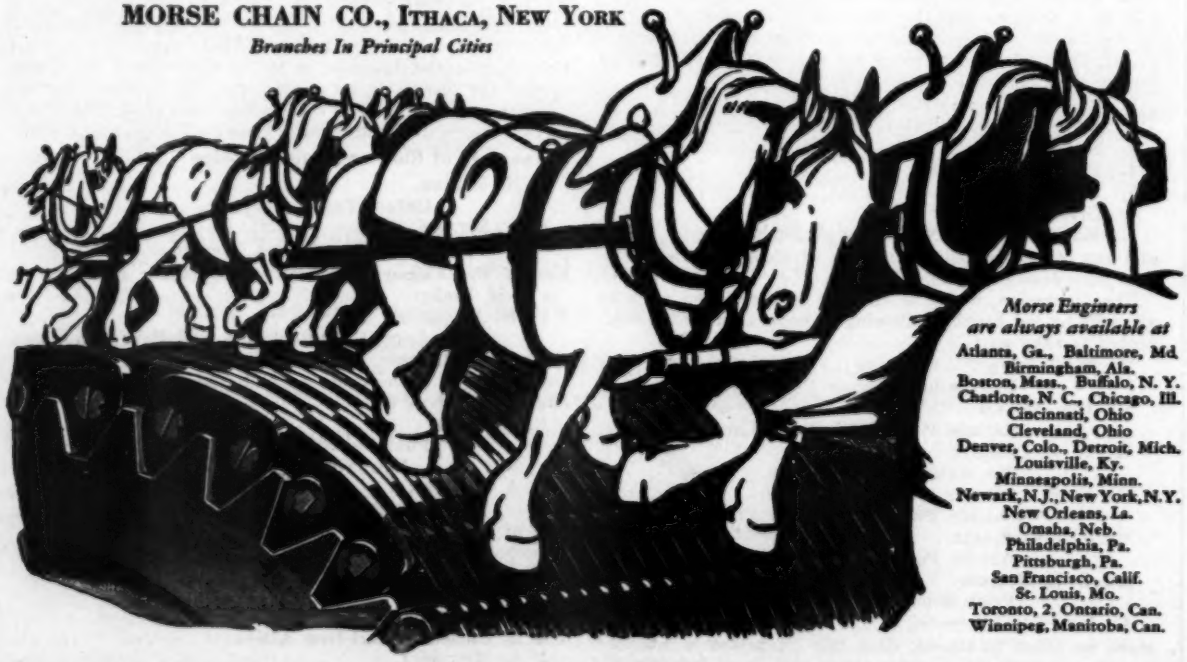
The MORSE engineering staff specializes on the problems of power transmission. Their study of your needs, and their recommendations will obligate you in no way beyond the time you will spend with them.

A free data file, containing complete information on MORSE Silent Chains—how they are designed, how installed, and how to use them —will be sent you on request. Ask for it.



158 inch super calender, driven from motor by 150 H.P. Morse Silent Chain

MORSE CHAIN CO., ITHACA, NEW YORK
Branches In Principal Cities



Morse Engineers are always available at
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Cincinnati, Ohio
Cleveland, Ohio
Denver, Colo., Detroit, Mich.
Louisville, Ky.
Minneapolis, Minn.
Newark, N.J., New York, N.Y.
New Orleans, La.
Omaha, Neb.
Philadelphia, Pa.
Pittsburgh, Pa.
San Francisco, Calif.
St. Louis, Mo.
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MORSE SILENT CHAIN DRIVES

Be sure to visit the Morse Chain Company Exhibit at the Road Show, Atlantic City, January 11 to 17, inclusive

QUEBEC

The Development of Natural Resources

The assistance that chemical engineers can give towards the development of Canada's natural resources was outlined last month before the Society of Chemical Industry, Montreal Branch, by Dr. Harold Hibbert, professor of industrial and cellulose chemistry at McGill University. The lecturer dealt especially with the fields of agriculture, mining, forests, natural gas, petroleum and sea products.

Since 1913, said Dr. Hibbert, there has been an enormous increase in the demand for rayon, paints, motor cars (which use varnishes and lacquers), cosmetics and perfumes, drugs, and nitrogen products. This demand may be partly supplied by the Canadian maunfactures that are the result of research by chemical engineers.

In agriculture there is less science applied than in any other industry, but research can give a great deal of help to the farmer. Farm waste, such as corn stalks, may be used for building materials, paper and gas. Artichokes are used in the United States for the manufacture of fructose, and glucose can be made from corn. The farmer must look to the chemist for much of his fertilizers and germicides; and the germinating time of potatoes and other forms of plant life may be considerably hastened by the application of ethylene chlorhydrin.

More research has been carried on by chemists in the coal and lignite fields than in any other, said Dr. Hibbert. The liquefaction of coal by the application of tar and hydrogen may make Germany independent of imports in this line, and there is lignite in Northern Ontario which merely awaits to be developed.

In the matter of the forests, the important thing for the chemist is to devise ways and means whereby the wood waste may be utilized. Fifty per cent of the waste is cellulose, and it is expected that the cellulose industries, including rayon manufacture, will keep on growing for sometime. Another important thing that the chemical engineer must find out is whether spruce is the best wood to use in the manufacture of paper. There is a special type of poplar which matures much more quickly than spruce, which would be profitable to use instead if it could be made commercially practicable.

Dr. Hibbert then explained how ethyl alcohol can be manufactured from any one of five sources—molasses, calcium carbide, waste cellulose, ethylene (which comes from petroleum and from coke-oven gases) and sulphite waste liquor. The last named is the favored process, he said. There will probably be a great demand, he added, for cellulose acetate to be used for cinematographic films, and for certain kinds of rayon.

Timber Limits Leased in Small Blocks

To encourage the operation of small saw mills and to stimulate employment and prevent heads of families from having to leave their homes to take jobs with the large pulp companies, the provincial government has leased a number of small timber limits under new conditions requiring that the lumber shall be manufactured on the spot.

The limits, going on 20-year leases, are in the Abitibi region, on the upper St. Maurice, and along the northern shore of the St. Lawrence River, all remote sections in which employment dwindles with the closing of the summer season. In addition to the requirements of local manufacture of lumber, it is stipulated that the minimum of 10,000 feet of timber must be cut per square mile annually. The blocks offered ran from 3¼ square miles to 49 square miles, totalling 142 square miles.

It is announced that the mills of the St. Lawrence Paper Mills, at Three Rivers, enjoy the distinction of running over capacity on a regular schedule, and have sufficient contracts on hand to keep up this production for months to come. Until three months ago the mill was operating with only four machines, having a capacity output of 90,000 tons a year. Since that time two additional machines have been started, increasing the capacity of the plant to about 135,000 tons a year. It is understood that these new machines are 10 per cent more efficient than the others, and production has actually run in excess of their rated capacity.

Eddy to Receive Concessions from City

At a recent meeting of the Chamber of Commerce, of Hull, several persons referred to the difficulties incurred by the E. B. Eddy Co. in meeting market prices on paper with annual municipal taxes of $125,000 to be paid. Members approved of a delegation made up of council members and representatives of the Chamber of Commerce meeting officials of the Eddy company in the near future in order to collect information as to what assessment changes the company feels are necessary.

Similar steps will be taken towards the International Paper lumber mill, which has been out of operation recently. An investigation to ascertain the reasons preventing the company from operating during the whole year will be started, and council co-operation will be asked in order to offer all possible assistance towards the reopening of the mill during the coming season.

Rolland Benefits by New Machine

The Rolland Paper Co., Montreal, whose plants are located at St. Jérôme and Mont Rolland, is feeling direct benefit from the use of the additional 86-inch fine paper machine which was installed in the plant at St. Jérôme and which has been in operation since last March, as well as advantages of other physical improvements and the effecting of certain operating economies.

According to reliable information the company's sales for the first ten months of the current year to October 31st, show an increase in total value of very close to 15 per cent as contrasted with those for the similar period a year ago. This improvement in turnover is finding reflection in the general financial position of the company. In the ten-month period bond interest and preferred dividends were earned with considerable margins to spare, and a satisfactory balance remains available against the no-par-value common stock.

Bag Company Supplies Added Outlet for Brompton

The establishment of Pyramid Paper Products beside the East Angus plant of the Brompton Pulp and Paper Co. is working out well in providing a growing market for Brompton paper. The bag company has recently completed installation of two new machines. The present year will show the regular dividend paid on the shares of the Brompton Pulp and Paper Co. earned by a substantial margin.

The company is running its new newsprint plant at Bromptonville at full capacity, cutting down production at East Angus to fit in with the average. At the latter mill colored newsprint is being manufactured. This has been the case for some months past and results from the new type of product are quite encouraging to the management.

Advertising Men Visit Institute

By invitation, some fifty advertising men, members of the Advertising Club of Montreal, were entertained at the Cellulose Research Institute on the evening of December 4th. They were addressed by Dr. Harold Hibbert, professor of Industrial and Cellulose Chemistry at McGill University, and they were shown about the building with its several laboratories and its paper mill installation, members of the staff acting as guides. The visitors were received by Edward Beck, Secretary of the Canadian Pulp and Paper Association.

Dr. Hibbert made use of quite a number of exhibits of various raw, semi-finished and finished products in illustrating his talk. He explained the origin and organization of the Institute and sketched its methods of work. He said its aim in carrying out research in the field of wood pulp and its use in papermaking and for other purposes, is to

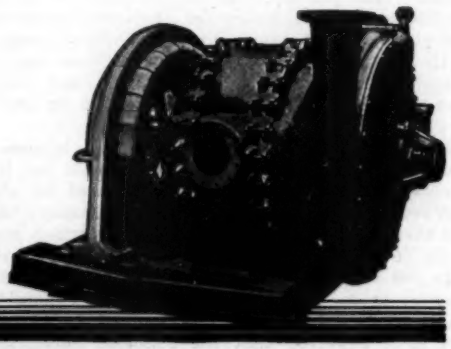
Direct drive reduces maintenance costs

SIMPLIFIED design—direct connection to a synchronous motor—keeps maintenance costs down to the minimum on a Jennings Flat Box Pump. Air rotor, water impeller and motor are all mounted on one shaft. There are no gears, belts or chains to require inspection, adjustment and replacement. Operation at full load can be maintained with very little attention.

Direct drive saves power, too. No power is absorbed in transmission as with other forms of drive—every bit that the motor develops goes directly to the pump for useful work. Write for descriptive bulletin.

JENNINGS
FLAT BOX PUMP

Capacities from 150 to 5000 g.p.m. of water together with 80 to 2300 cu. ft. per min. of air at 10 in. vacuum.



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THE NASH ENGINEERING CO. 161 WILSON ROAD, SOUTH NORWALK, CONN.

BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA
EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUTATION

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SODA BLACK LIQUOR SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO
WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

ZAREMBA COMPANY
506 Crosby Bldg., Buffalo, N. Y.

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improve the quality of the products, to improve the markets by finding new outlets, and to enable manufacturers to get better prices for their goods.

The speaker took up paper, sulphite pulp, newsprint and textiles made from wood pulp. This topic he illustrated by diagrams on the blackboard, and explained in some detail, because, as he indicated, the use of wood pulp for the manufacture of many varieties of textiles is an accomplished fact, so far as the chemistry of the problem is concerned. He showed samples of celanese rayon yarn, ready to be woven into cloth, and of viscose rayon yarn, and briefly indicated the different chemical and mechanical processes involved in producing the yarns. He suggested that conditions indicate that there is to be a very great industry in Canada in the way of many kinds of textiles and knitted goods originating from wood pulp.

Dr. Hibbert described the process of making gun cotton from sulphite pulp, and then the process of making varnishes from gun cotton, such as Duco, so extensively used for finishing automobile bodies and many other uses; the making of so-called artificial leather, non-shatterable glass, insulating materials, paints, glues, and many other products from cellulose used in the form of sulphite pulp; and he graphically suggested the rapid growth in consumption of certain products which have already acquired great importance.

E. P. Cameron, Director of the Pulp and Paper Division of the Forest Products Laboratories of Canada, then gave a short address on the work and equipment of his organization. Outlining briefly the breadth of the field which it was necessary for such an organization to cover, he showed concisely how the semi-commercial scale of operation was necessary as a medium for translating the results of basic scientific research into data applicable to commercial operation. The necessity of semi-commercial equipment was then made plain and, after touching upon the main points of interest in the experimental mill installation, the meeting was divided into groups of six or eight and proceeded to inspect the Institute and its equipment.

Dominion Newsprint Co., Ltd., was recently granted a charter authorizing it to generally deal in all kinds of paper, board, pulpwood, etc., with headquarters at Montreal. The capital stock of the company is $1,000,000, divided into 10,000 shares of $100 par value each. Among the incorporators are Herbert Bayne McLean, George Carlyle Marler and Edouard Cholette, notaries public, all of Montreal, and George Talbot, accountant, of St. Lamberts.

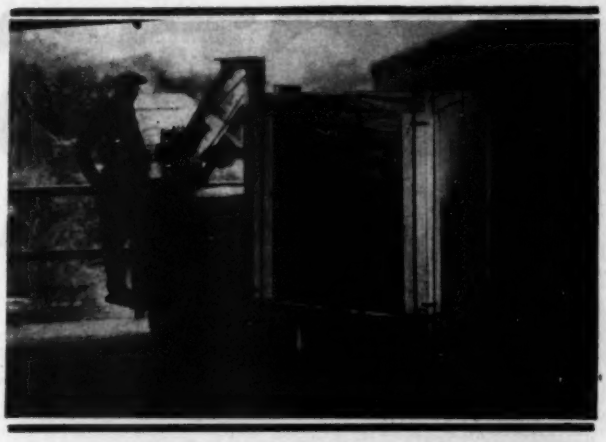
Ayers, Ltd., of Lachute, manufacturers of pulp and papermakers' felts, is building a new story and basement addition to its cotton drying-felts weaving mill.

The seventh annual dinner of the superintendents of the Three Rivers mill of Canadian International Paper Co. was held last month at the company's own clubhouse at the Metaberoutin Club, and it proved as usual a highly entertaining get-together.

Lee Labarge, day foreman of paper machines at the Gatineau mill of Canadian International Paper Co., has been promoted to the position of paper mill superintendent at the new Dalhousie mill of New Brunswick International Paper Co.

Jacob Dahl, chemist at the Hawkesbury, Ont., mill of Canadian International Paper Co., recently joined the staff of the Forest Products Laboratory, Madison, Wis.

The death occurred on December 2nd of John Alexander Fraser, late superintendent of The Montreal Coated Papers, Ltd., Montreal. On October 26th last Mr. Fraser was the victim of an automobile accident which caused his passing. The deceased is survived by his widow, three daughters and two sons, all of Montreal; two brothers, William of Montreal, and Joseph of Glasgow, Scotland, and one sister in Aberdeenshire.



Handling 3000 Pounds as easily as 300

Tests prove that savings ranging from 25% to 90% can be made through the use of skids as compared with old methods of packing.

The superior tensile strength and safety features of Stanley "Eversafe" Nailless Strapping together with the ease and speed of applying make it an outstanding contribution to economical handling and shipping.

The loaded skid can be strapped in a fraction of the time necessary to pack the same quantity in small units. The larger unit can be easily handled by one man and a lift truck and saves much of the expense and delay of frequent rehandling.

Send for full information on Stanley "Eversafe" Nailless Strapping System for skid shipments.

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Stanley "EVERSAFE" Strapping for Skid Shipments

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BLAW-KNOX COMPANY
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More U. S. Mills to Make Newsprint

Except that the Canadian press generally is strongly supporting the action of the leading Canadian newsprint manufacturers in their plans for increasing the price of their commodity to $60 per ton, there were no new developments in the price situation during the last few days of December. At the same time, a great deal was going on behind the scenes. For instance, A. R. Graustein, president of International Power and Paper Co., has been in Montreal conferring with officials of the Canadian subsidiaries of his organization, and also with executives of the larger Canadian producers. The caucus among paper producers in Montreal is understood to have been a prelude to a general conference in New York.

It is very significant, however, that the six machines of International Paper's Fort Edward mill, on which $3,000,000 were recently expended to change it from a newsprint to a bond paper mill, have once more started making newsprint. It is understood that the South Glens Falls and the Ticonderoga mills of the same company will shortly be started on newsprint.

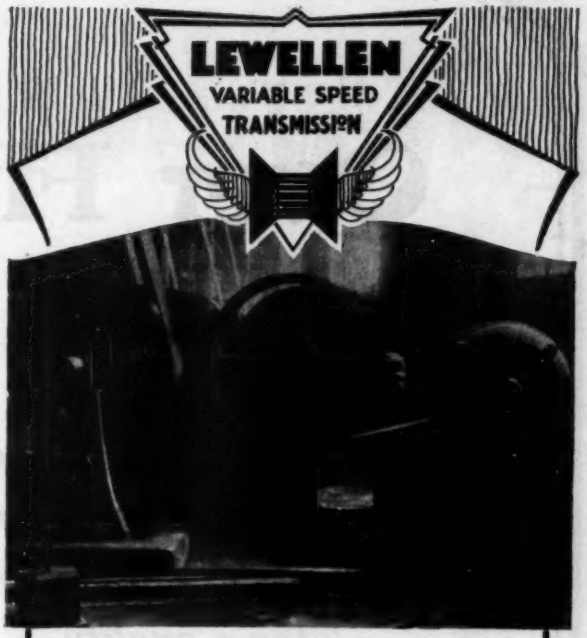
As Premier Taschereau of Quebec, in which are located the larger portion of International Paper's Canadian pulpwood limits, has made it very plain that the present price of newsprint is not considered at all satisfactory by his government, while on the other hand the company's contract with the Hearst interests (involving several hundred thousand tons of newsprint a year at the present price) has still several years to run, it looks as though International Paper intends abiding by the terms of the contract and supplying the Hearst papers with newsprint made in the United States. It remains to be seen how this will affect the finances of the company. Even the low-cost Canadian producers claim there is no money in newsprint at the present price of $55.20 a ton, and costs in the United States are conceded to be appreciably higher than in Canadian mills.

Great interest now centers on the position that will be taken by International Paper after July 1st. The general opinion seems to be that the continuation of the present price by International until July 1st means only that all newspapers will pay $60 a ton for newsprint after that date, instead of some of them paying it then and others immediately, since the majority of the Canadian newsprint manufacturers have indicated that the price would be increased on July 1st. Further interesting developments may take place before then, however, as the European newsprint manufacturing group known as "Ticon" will meet the Canadian and American manufacturers in Quebec during February next. It is expected that efforts will be made to bring about stabilization of world markets by organizing an international bureau of statistics, the purpose of which is interpreted to be to induce the European manufacturers to increase their price in the United States market or abandon it altogether.

At the last minute it has just been announced that Canada Power and Paper and Price Bros. are notifying their customers that the 1929 price will be continued during the first six months of 1930 without the previous three-year contract requirement. It is understood that the price for the last half of 1930 will be determined later in the year.

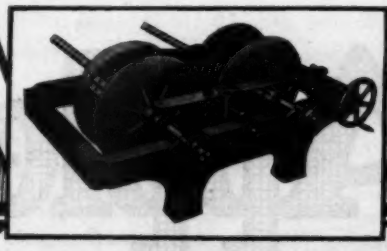
C. L. Winter, who has been western representative of the Claremont Paper Co. for a number of years, has been appointed sales manager of the parent company, the Brompton Pulp and Paper Co., of East Angus. Mr. Winter will take up his new duties about February 1st, and will be located in Montreal.

Shawinigan Water and Power Co. recently finished the construction of a 67-mile transmission line from Grand'Mère to La Tuque. The line is designed to carry 200,000 hp. at 250,000 volts for the purpose of transmitting power from extensive new power developments on the Upper St. Maurice river south to Grand'Mère. At present, however, it is operating as a single-circuit three-phase line at 66,000 volts, and is carrying power from the Laurentide plant of the company at Grand'Mère to the mill of the Brown Corporation at La Tuque. An interesting feature of the line is the fact that



This Lewellen transmission is one of a large number in a roofing manufacturing plant. Wherever paper products are made, Lewellen transmissions are helping to make them. Accurate variable speed control is of utmost importance in modern production and is particularly necessary in the making of paper products. Cutters, double backers, corrugators, rewinders, in short, wherever speeds must be accurately varied at will, the Lewellen is indispensable. Lewellen users are our best advertisements.

The new Lewellen catalog No. 25 will give you valuable information on your variable speed control problems. May we send it to you?



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Over Fifty Years

Experience in the manufacturing of wires for American and Foreign paper makers and the ever increasing use of Appleton Wires testify to their quality.

Looms of our own design, wire drawn in our own plant to specifications derived from exhaustive research, and carefully trained operators make this high quality possible.

Appleton Wires

are good wires

APPLETON WIRE WORKS INC., APPLETON, WIS.

it was located from airplane photographs, this method rendering it possible to start the construction work much sooner and to locate the line more advantageously than by former methods of laying out the right-of-way from the field without the use of information available from airplane maps.

The Minton vacuum dryer installed by the Minton Vacuum Dryer Corp. on the pulp-drying machine of the Brown Corp.'s mill at La Tuque is living up to expectations, and four days after being started up it reached its designed capacity of 100 tons per day of kraft pulp. The dryer has 25 drying rolls, 60 inches in diameter and 144 inches wide, and runs at 100 feet per minute. The maximum steam pressure in the main header of the dryer section is 5 pounds. It is expected that the Brown Corp. will shortly prepare for the second installation of a Minton dryer at La Tuque.

The technical department of the Howard Smith Paper Mills, Ltd., has been moved to a newly fitted building on Guy St., Montreal, where complete laboratories are being installed. George H. Tomlinson, technical director of the company is in charge, with Dr. Gordon Irving Hoover, until recently of the Department of Cellulose Chemistry at McGill University, in immediate charge of laboratory work.

◆ ONTARIO ◆

Dryden's Report Highly Satisfactory

The first financial statement issued by Dryden Paper Co. since the company was taken out of receivership on December, 1928, shows operating profits for the year at $338,490, which are, it is stated, substantially more than for the preceding fiscal year. Miscellaneous revenue is shown at $13,332, making total income $351,822. After deduction of $100,118 bond and debenture interest, there is shown a net profit for the year of $251,704, from which amount there is further deducted $100,000 for depreciation and depletion, leaving a surplus of $151,704 to be carried forward. The balance sheet shows the company to be in a strong position, current assets being more than nine times current liabilities at $960,453 and working capital at $854,134.

In the course of his remarks to the shareholders, president J. H. A. Acer says in part: "During the past fiscal year the company has been taken out of receivership and the bank loan and all the old funded indebtedness have been retired, and all interest thereon paid. The receivership ended in December, 1928, and the new financing was completed in April, 1929. For this fiscal year the net earnings, before depreciation and depletion, are substantially more than for the preceding year. Owing to change of management due to termination of the receivership and to the new money in the business having been available only part of the time, the fiscal year covers a period of transition. The financial results of the last few months are more favorable than the year's average. No charges for depreciation and depletion having been made during receivership, it has been decided, by advice of the company's auditors, to transfer from surplus to depreciation reserve an amount of approximately $775,000, in addition to $100,000, charged off for the current year. Since the receivership terminated, large amounts have been expended on the plant to bring it to a high state of efficiency."

Canadian Branch Opened by Easton Firm

The Individual Drinking Cup Co., of Easton, Pa., makers of "Dixies" which are used not only as drinking cups, but as containers for ice cream and for many other purposes, is establishing a Canadian plant in Toronto, and has decided to transfer immediately to the new branch the complete export trade of the parent American concern. It has leased about 8,000 square feet of space in the Cowan Building, on Sterling Road, and production will commence at once.

Among the countries with which the company's export trade is large are those in the British Empire, and particu-

POWELL VALVES

IT is unnecessary to recount the virtues of Powell Valves to experienced paper mill engineers. Years of efficient, dependable performance have established their worth in every class of service.

Fig. 102
Bronze
"White Star"
Globe Valve

Fig. 478
"Pilot"
Gate Valve

Fig. 460
Iron Body
"Pilot"
Gate Valve

THERE'S a Powell Valve for every paper mill need—bronze, iron and steel valves—as well as special alloy valves—for steam, water, oil, gas or air, for pressures of 75 to 2,000 pounds.

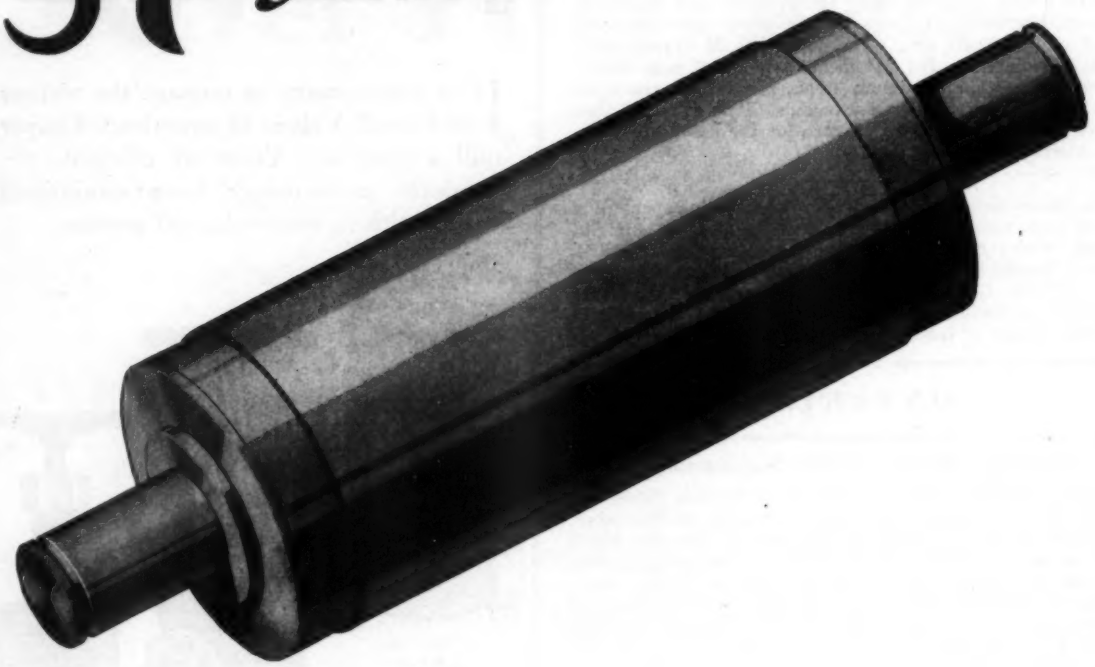
POWELL PRODUCTS

A complete line of bronze, iron and steel, as well as special acid resisting valves. Also Oilers, Lubricators, Grease Cups, Water and Oil Gauges, Whistles, etc.

THE WM. POWELL CO.

2521-31 SPRING GROVE AVE.
CINCINNATI, OHIO

57 *years*



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When you specify Perkins Calender Rolls you enlist for your service the aggregate of fifty-seven years experience in this highly specialized industry.

Perkins Calender Rolls have the distinguishing mark of individuality because of the Perkins methods of manufacture. Every roll is made with a knowledge of the work it will be required to perform. Every roll is made to stand heat better and wear longer.

LARGEST MAKERS OF CALENDER ROLLS IN THE WORLD

B. F. Perkins & Son, Inc., Holyoke, Mass.

COTTON ROLLS
PAPER ROLLS
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VENTILATING FANS
RAG CUTTERS
STOCK CUTTERS
PAPER DAMPENERS
BLEACH EJECTORS

larly in the British Isles themselves, Australia and South Africa, South American countries, France, Italy and Cuba.

As a result of this policy the new company, with both the domestic Canadian trade and the export trade at its command, can commence large production from the very beginning, making the new Canadian plant of greater importance than it could possibly have been with the local Canadian trade only. The Toronto plant is the first foreign unit of the American company. The company is said to be the original makers of the paper cup and the operations of the parent concern in Easton are most extensive.

Miss Eileen Battle, of St. Joseph's College, Toronto, has been chosen in a personality contest at Thorold to go to England to christen the new motorship "Thorold," which has been constructed at Hull for the Ontario Paper Co. The launching is to take place on January 18th. The ship will be used to carry paper from the company's mill at Thorold to Chicago, for the "Tribune," which owns the Ontario Paper Co.

W. Ivan Moffitt, of Toronto, the popular secretary of the Canadian Paper Trade Association, was married last month to Miss Elsie Loretta Cowan, also of Toronto. After a short honeymoon in Quebec, the happy couple took up their residence on Lonsdale Road, Toronto.

Abitibi Had Good Year

With the end of December, the fiscal year of Abitibi Power and Paper Co. came to a close. The report of the year's activities, however, will not be mailed to shareholders until some weeks hence. There is a great deal of interest surrounding this report for 1929, as it will give investors some idea of what a company like Abitibi can do with newsprint at $55 a ton.

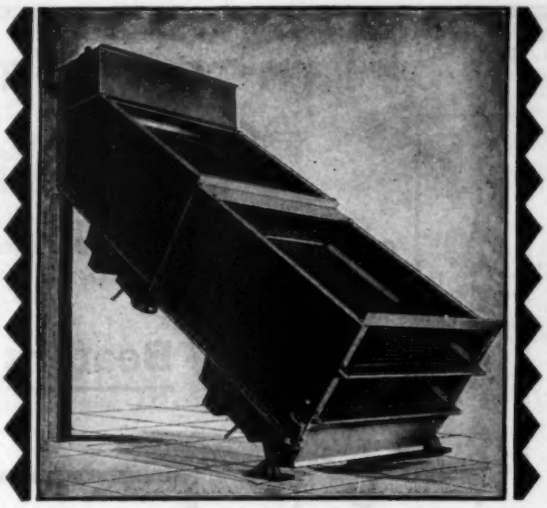
Abitibi is the leading low-cost unit engaged in the newsprint industry in Canada, with enormous water power developments and extensive timber reserves, which were acquired at low cost. People well informed on the affairs of the company say that the company is operating at about 87 per cent of capacity and is earning its preferred dividend requirements by a fair margin, which is interpreted to mean that for the full fiscal year the company may show in excess of $2 earned on the common stock. Earnings for 1928 were equal to $1.15 per share.

Consumption in 1929 has shown roughly 9 per cent increase over the previous year, which explains to some extent why Abitibi should show a slight improvement in earnings. Another reason is that the management has made good headway in consolidating the merged properties.

The company will very shortly take possession of its handsome new executive offices on University ave., Toronto, just north of the new Provincial Paper head offices. The Toronto office will be known as the business office of the company. The head office will remain at Iroquois Falls, where is located the original Abitibi mill, which is also the largest of the present group. There will still be maintained an office in the Canada Cement building, Montreal.

The Carthage Machine Co. of Canada, builders of pulp and papermaking machinery, which has been operated and controlled by the parent company in Carthage, N. Y., hereafter will have its head office in Belleville. Messrs. Wardell and Hinds, of Watertown, N. Y., respectively manager and president of the American company, visited Belleville and disposed of their stock to a group of Belleville capitalists. The new shareholders elected the following officers: president, R. J. Graham; secretary-treasurer, F. S. Wilson; manager, W. R. Tidmarsh; directors, H. W. Ackerman, Jamieson Bone and R. J. E. Graham.

Working plans are practically completed in the offices of Earle L. Sheppard, architect, of Toronto, and tenders will shortly be called for the erection of a large manufacturing plant and office building on Ray Avenue, Mount Dennis, a suburb of Toronto, for the F. N. Burt Co., Ltd., manufacturers of stationery, paper boxes, etc. Plans call for a one-



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Small floor space required!
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Fully adjustable screening angle and vibration!
No lubrication!
No destructive shaking of supports or buildings!
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These are the features which make the Wood Chip Hum-mer a profitable investment for pulp and paper mills!

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Built by Jones

SATISFACTION Since SERVICE

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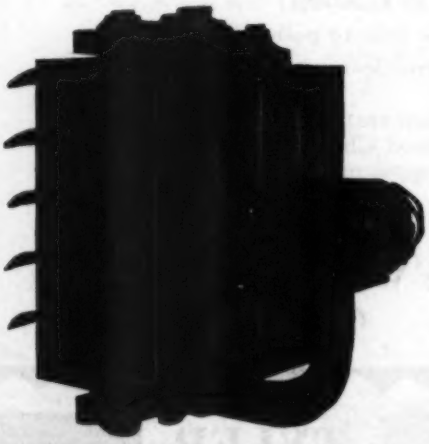

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A new principle in Unit Heater design.

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story building, 350 feet by 175 feet, of steel frame and stone-trimmed brick-face construction, saw-tooth roof and low-pressure steam heating. The approximate cost of the whole project is placed at $150,000.

Nipigon Mill to Be Reopened

Recent advices from Port Arthur say there is every indication that the groundwood mill located two miles from Nipigon, which has a capacity of 70 tons per day, will shortly be opened up. The plant, which is now owned by International Paper, has six grinders and seven wet machines, the product of which would be shipped by rail.

The purchase of the plant by International Paper included also the taking over of extensive pulpwood limits. The mill was constructed and operated originally by a company known as the Nipigon Corporation and representing the Murphy interests of Appleton, Wisconsin. It was later secured by the Nipigon Fibre Co., of which Noah Timmins was the head, and finally taken over by International Paper.

An order for a large shipment of pine timber has been given to John R. Booth Co., of Ottawa, by the British Admiralty. The trees, which are being taken from Algonquin Part, are huge ones, and Hon. William Finlayson, Minister of Lands and Forests, has had the operations filmed by the provincial movie bureau. It is probably the last time that such operations will be conducted in Ontario, as the supply of timber suitable for the purpose is practically exhausted.

Several years ago the Abitibi Power and Paper Co. was faced with the necessity of building a railroad to transport pulpwood from its northern limits to the mill at Iroquois Falls. In 1922 a sijteen-mile, standard gauge line was constructed north from Iroquois Falls on the Temiskaming and Northern Ontario Railroad to Stimson on the Canadian National Railroad. This main line has now been extended ten miles north of Stimson, and the right-of-way has been surveyed for a further thirty-five miles. Further construction, however, will not be undertaken until logging requirements make it necessary. The railroad is a division of the Woods Department.

J. T. McLellan, general manager of construction of the Backus-Brooks Co., with present headquarters at Fort William, announced a short time ago that he had conferred with Hardy S. Ferguson of New York, consulting engineer of the company, with regard to the proposed extension of the interests of the Backus-Brooks Co. at the head of the Lakes. He declined to discuss or amplify as to the nature of the proposed new construction now under contemplation beyond stating that it involves the manufacture of wood products.

Alliance Paper Mills, Ltd., are contemplating the installation of new dryers for the new cylinder paper machine at their Lincoln Division, at Merritton. When these are in operation, the machine, it is claimed, will be unexcelled for the production of the grades of paper on which it has been decided to specialize.

W. H. Potter, general manager of the Abitibi Transportation and Navigation Co., which operates the Abitibi railroad at Iroquois Falls, died last month at North Bay. He was fifty-three years of age. He leaves a widow and three daughters, who are all residents in Ottawa, and one son who is stationed at Iroquois Falls.

The northern group of mills of the Ontario Pulp and Paper Makers' Safety Association, comprising mills at Iroquois Falls, Sault Ste. Marie, Sturgeon Falls, Espanola and Kapuskasing, recently held a meeting at Iroquois Falls. It covered two days of intensive work and study of accident prevention in the paper mills, and was presided over by Edward Silver, local manager of the Abitibi Power and Paper Co. The gathering also included a visit of inspection of the Iroquois Falls mill. The program was an interesting and instructive one and brought forth discussion on safety mat-

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That Can Really
Be "Put Through the Mill"

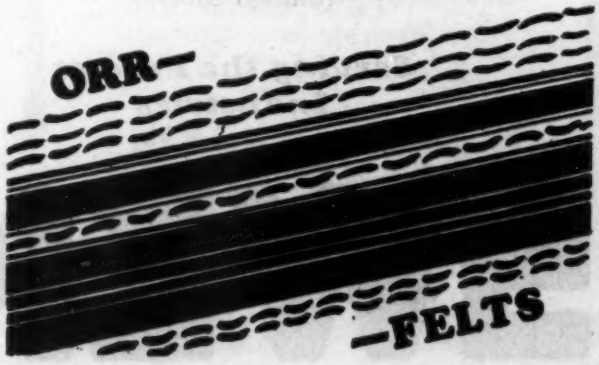
Felts passing between the nip and rolls uncountable thousands of times, with production pounding away at top speed must be *good* felts. Orr felts *are*. Give them the job of removing a maximum of water—put them "through the mill" at production pace—and don't make your dryers sweat out the task that Orr Felts can do ahead of them.

Orr Felts combine the qualities of strength, stamina, removing water with freedom from breaks, reducing steam consumption, and less down time. Back of them is a highly specialized manufacturing skill—a knowledge of mill problems—the experience and ability to produce felts for every grade and class of machine.

Many mills now use Orr Felts because they know the facts. The mills who haven't tried them have missed the opportunity of finding out just what Orr Felts can do in the way of aiding production and reducing costs. Still—there is time to try them!

A complete line—for every particular type and need. Our representatives can assist you if you'll state your requirements.

Orr Felt & Blanket Co.
Piqua, Ohio



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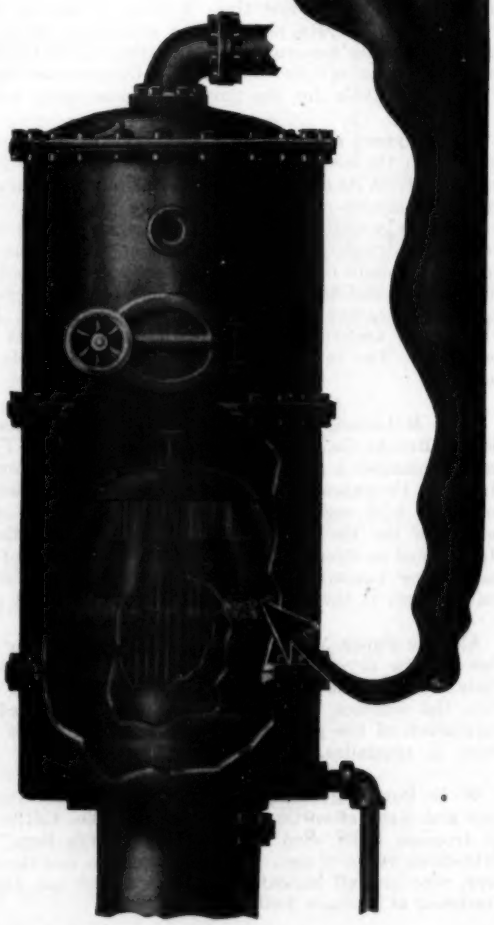
Viscous, sluggish liquors which reduce the capacity of an ordinary evaporator are easily handled by the Swenson Forced Circulation Evaporator. In many cases this economical machine will concentrate thick liquors to higher density than has ever been commercially possible. As long as the liquid can be pumped, concentration can be continued in the Swenson Forced Circulation Evaporator.



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The Swenson Forced Circulation safely handles black liquor to 36° or 38° Be—the concentration required for modern recovery furnaces. Vapors from the concentrator may be used to operate a preheater or black liquor evaporator. Other advantages of the Swenson Forced Circulation Concentrators are given in our Bulletin S-128. Send for it today.

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Serving the Process Industries

SWENSON

ters in the mills from all angles, which brought out much useful information and the decision to hold another group meeting in Northern Ontario at an early date. Practically all the paper companies in the North were represented at the meeting and the Ontario Government sent up officials of the sanitary branch, including Chief Inspector W. Miller, and several district local inspectors.

The Hinde and Dauch Paper Co., of Canada, with head office in Toronto, recently announced the regular quarterly dividend for the final period of the fiscal year, which ended December 31. Profits of the company are not expected to be materially higher than was the case last year, owing to the severe competition with which the management was confronted. Throughout most of the year the three plants of the company, located in Toronto, Montreal and Trenton, were operating at a high rate, but the results secured were not as satisfactory as in other years due to the large amount of price-cutting that was in progress. This situation has now been adjusted, and with January 15 there will go into effect an advance in the price of fiber board, which is expected to work to the advantage of all companies in the manufacture of corrugated paper products and kindred output, such as fiber shipping boxes and straw paper for corrugating purposes.

E. McGrath, one of the oldest employees of Interlake Tissue Mills Co., suddenly dropped dead on his way to work at the mill at Merritton last month. Mr. McGrath, who worked in the crepe department of the Interlake mill, had been a worker in paper mills for over sixty years, having started at Georgetown, Ont.

Towards the latter part of December the Current river groundwood mill of the Thunder Bay Paper Co., at Port Arthur, was re-opened with a force of 125 to 130 men, an increase of 75 over previous operations. The paper mill, which had been shut down since December 1st, was re-opened with a full complement of men, the two plants employing about 375 hands between them.

Abitibi Personnel Changes

L. R. Wilson, manager of Abitibi Power and Paper Co., has announced the following changes, effective January 1st:

D. H. Parker, for some years manager of the Sturgeon Falls Division, has been appointed manager of the mill of the Thunder Bay Paper Co., at Port Arthur, owned jointly by Abitibi and Canada Power and Paper, replacing W. J. Hussey, who has resigned to accept a position with International Paper Co.

D. B. Chant, assistant mill manager of the Espanola Division, has been appointed manager of the Sturgeon Falls Division.

C. C. Sisler, who has been superintendent of the Sault Ste. Marie Division, has been appointed manager of that division.

◆ NEW BRUNSWICK ◆

International Reopens St. George Mill

Satisfaction has been expressed with the quality of pulp now being produced at the St. George pulp mill. The output is being shipped by rail to a New England paper mill controlled by International Paper, it is understood. The St. George mill is now operated by International Paper. At the resumption of production at this mill after an idle period of two years, the plant was operated at about 50 per cent of capacity owing to low water. At present the mill is being operated at capacity, with a 100 per cent staff.

About 400 tons of pulp which had been stored on the dock at St. George since the closing of the pulp mill somewhat over two years ago has been shipped in recent weeks to New Hampshire, by rail. It was necessary to use a large number of motor trucks to transport the old pulp and new pulp to the

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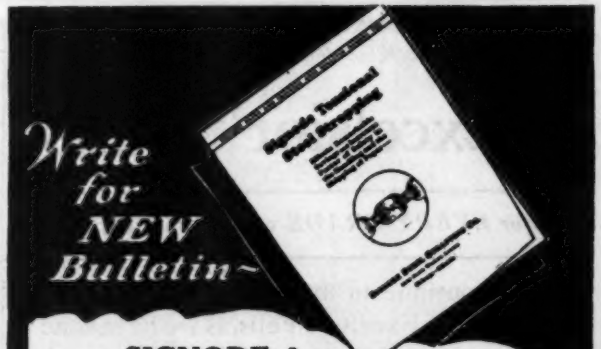

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At AUSTIN, PENNA.—The Bayless Mfg. Corp.'s complete, up-to-date Paper Mill at fraction of its actual value.

At CHEBOYGAN, MICHIGAN, the Paper Mill of the Union Bag and Paper Corp., at a very low price. Exceptional water power contract offered by the Michigan Power Co.

At BUCK RUN, PENNA.—The Coatsville Paper Mills, Inc. 86" trim three cylinder machine. Good specialty mill, ready to operate.

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WANTED—Graduate Chemist for Modern Pulp and Paper Mill with several years' experience. Address Box 172, The Paper Industry.

WANTED—Position as finishing room foreman on coating and book stock. Have had 13 years experience in paper making. Can furnish first class references. Will locate anywhere. Address Box 173, The Paper Industry.

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A 48-page pamphlet made up of practical helps, many of which have meant considerable savings in paper and pulp mills. Of tremendous value to the practical man. Price 50c.

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railroad station at St. George. Trucks have also been used in bringing pulpwood to the mill, representatives of International Paper, including Manager Hawes of the St. George mill, having contracted in St. John and Charlotte counties for a steady supply of pulpwood during the winter.

Fraser Passes Dividend

President Archibald Fraser recently sent the following letter to the shareholders of Fraser Companies, Ltd.:

"The very large expansion in our paper manufacturing capacity, together with the construction of the new 45,000-ton bleached sulphite mill at Athol, have greatly increased our working capital requirements. With a view to maintaining as strong a working capital position as possible, your directors have decided to defer the payment of dividends on your common shares until the full benefit of the construction program, now about completed, is realized."

The last payment of 25 cents quarterly was paid on October 1, and the next would have been due January 2. The annual rate of $1 per year had been in force since 1928, when the stock was changed to the no-par-value class, the basis of exchange being three new for one old. New stock was issued that year at $50 per share, but since the announcement of the passing of the dividend its value on the stock exchange has fallen to $15.

◆ MANITOBA ◆

The Martin Paper Products, Ltd., has just completed a factory at St. Boniface for the manufacture of corrugated containers and other paper products. The approximate cost of the plant and machinery was $235,000, and the president of the company is John Martin, former owner of the John Martin Paper Co.

◆ BRITISH COLUMBIA ◆

Financing for Westminster Mill Arranged

Preliminary arrangements for financing the new plant of the Westminster Paper Co. up to $300,000 have now been completed by the company with Nesbitt Thomson and Co. The city of New Westminster has been asked to guarantee the six and a half per cent bonds of the issue as to interest. Before the city can undertake this unconditional guarantee, it will be necessary to submit a by-law to the rate payers.

The company has announced that two Eastern Canadian manufacturing concerns will shortly be merged with the British Columbia plant, thus making a Dominion-wide organization.

Work on the new mill has been started and is proceeding rapidly.

According to despatches from Vancouver, an organization known as United Financial Brokers has perfected a new process for taking the printing off any newspaper. The company now proposes to incorporate a subsidiary with the powers of a pulp and paper company for the purpose of raising sufficient capital to build a plant with a capacity of 30 tons a day. According to a report issued by chemical engineers who have examined the reclaimed product, the latter still shows traces of ink and it could probably not be made into paper at as high speeds as a mixture of fresh sulphite and groundwood, as the strength is somewhat lower than that of new pulp.

Although British Columbia pulp and paper mills are getting out of the West Indies market on account of the difficulty in maintaining competition with eastern mills with the advantage of cheaper transportation, they have managed to hold their strong position in the Argentine Republic and present indications are that the percentage of the Pacific Coast newsprint brought in the Argentine will rapidly increase. All down the West Coast of South America British Columbia mills have established themselves to the almost total exclusion of others. For instance, in the Republic of Colombia a single British Columbia paper company controls 80 per cent of the newsprint market, while the same company enjoys almost a monopoly on the newsprint market in the Panama Canal Zone.

Powell River Awards Contracts

The Powell River Pulp and Paper Co. has awarded the contract for the construction of dam, pipe lines, tunnel and power house at Lois River to the Stuart Cameron Co., Ltd., of Vancouver. This contract involves an expenditure of $2,000,000, and is the first unit of a big development program of the company. The new development in its initial stages will add 18,000 horsepower to the company's power resources. Work on the project, which also includes the erection of four large mill buildings at Powell River, has already commenced.

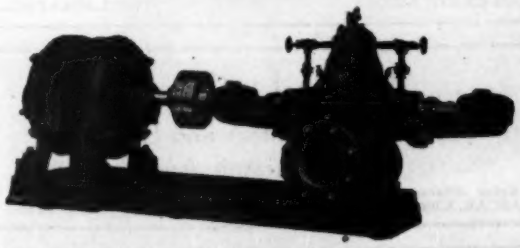
Stuart Cameron will personally supervise the contract work on behalf of his company. R. Bell-Irving, resident manager of the Powell River plant, and P. Sandwell, resident engineer, will supervise the work on behalf of the paper company. B. C. Condit will be consulting engineer for hydraulic measures.

Two sub-contracts in connection with the development program of the Powell River Pulp and Paper Co. have been awarded by the general contractors for the new high-tension line from Lois River to Powell River. Clearing of the right-of-way, 150 feet wide for 12½ miles, has been awarded to Minard G. Hill, Burnaby. The C. H. E. William Co., Ltd., Vancouver, will erect the poles and heavy high tension insulators, and will string the wires along the route.

The Holyoke Paper Corporation, well-known mill agent in New York, has filed notice of an increase in capital from $15,000 to $30,000.

PUMPS

THAT KEEP PRODUCTION UP AND UPKEEP DOWN



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SOUTHERN

Robert A. Marr Dies in Norfolk, Va.

Col. Robert A. Marr, widely known in the pulp and paper industry as the inventor of several novel chemical processes for the pulping of wood, died at his home in Norfolk, Va., on Thursday, January 2. He was seventy-three years old and a native of Nashville, Tenn. He had lived in Norfolk for eighteen years. Colonel Marr was for a number of years with the United States Coast and Geodetic Survey and had made several expeditions into Alaska. He maintained a laboratory in Norfolk in which he conducted numerous experiments in the pulping of wood and isolation of fibers for both paper and textiles.

Samuel E. Slaymaker

Samuel E. Slaymaker, who for many years had charge of the lumber and pulpwood operations of the West Virginia Pulp & Paper Company on the extensive timber land owned by that company in the State of West Virginia, died suddenly at Southern Pines, N. C., Monday, December 31, 1929. Funeral services and interment were at his former home in Sunbury, Pa., January 1, 1930.

The Bogalusa Paper Co., Bogalusa, La., is contemplating a small plant expansion program, plans for which are now in course of preparation. It will be sometime, however, before the company will request bids for the work.

Gulf Paper Products Company, Beaumont, Tex., recently granted a state charter, plans the construction of a plant in that city at once. W. L. Morgan is president of the Gulf Paper Products Company.

The George & Sherrard Paper Co., subsidiary of the International Paper Co., has completed the installation of machinery and equipment in the Camden, Arkansas, plant, with T. A. McCord in charge. The plant will manufacture cement bags, and will begin operations early this year. Between 50 and 75 persons will be employed.

OHIO

Sales agents of the Crystal Tissue Paper Company will be guests of the firm at their first sales conference of the year, January 13, 14 and 15. The company is preparing a program of business studies intended to benefit the representatives.

This will be the first conference of the kind ever sponsored by the tissue manufacturers since the organization of the company 31 years ago.

Tom Harvey, director of the Gardner-Harvey Paper Company, Middletown, Ohio, who is considered one of the foremost manufacturers and business leaders of the city, will address the Rotary club at its first meeting of the year. Mr. Harvey will give a business outlook on Middletown for the new year.

James Lawrence

James Lawrence, 82, president of the Lawrence Bag Co. and of the Raymond Bag Co., Middletown, died New Year's morning after an illness of several months.

Mr. Lawrence had an interesting career in the paper industry. He came to Middletown from Pittstown, N. Y., in the early nineteen hundreds, becoming associated first with the old Hill Paper Co. which later became known as the Sorg Paper Co. Following this he joined the Wardlow-Thomas Paper Co., later becoming its vice president.

He organized the Raymond Bag Co. in 1910 and the Lawrence Bag Company in 1920. He was president and director of both firms. His son, W. F. Lawrence, succeeds him in the business.

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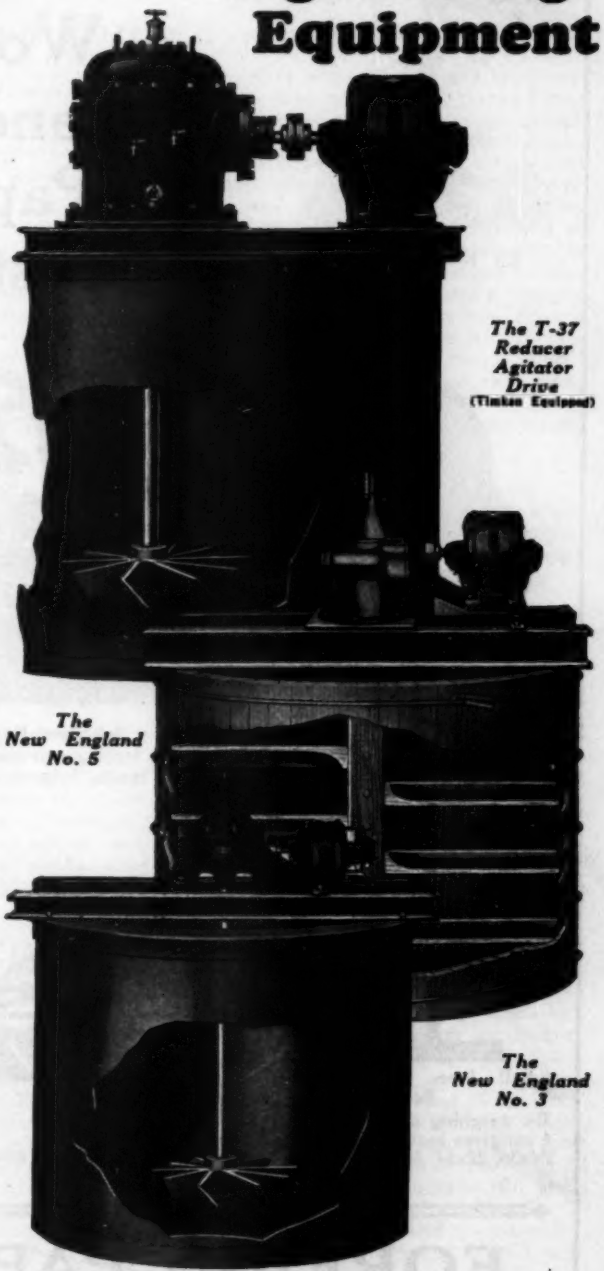

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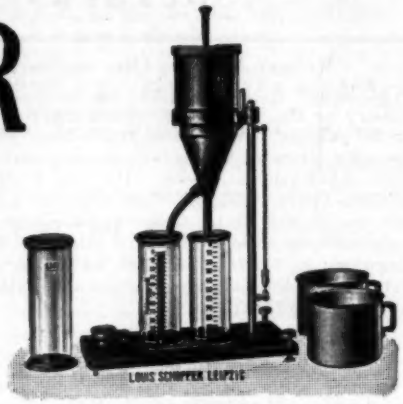

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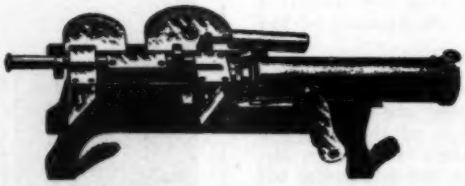

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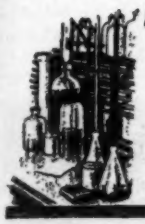


Technical Developments in the Paper Industry

Domestic and Foreign

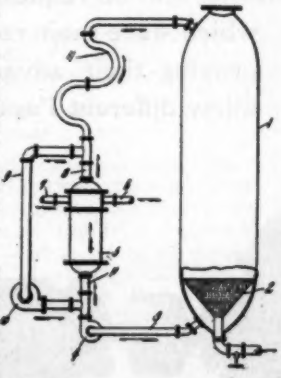
The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Remarks on Freeness

THE possibility of comparing the freeness coefficients or results, obtained from the use of various instruments, with one another is a very important matter from the practical side of papermaking. The different sizes of the meshes in the screens and the different concentrations of stock used in the testing apparatus prevent direct comparison of results. The author calculated a number of diagrams in which values obtained at constant temperature but with different sizes of screens and different concentrations of stock are brought to a basis on which a direct comparison can be made. Thus for example, the results obtained in the freeness tester in which the concentration is three to four grams of stuff to a liter and those obtained in the Schopper beating tester, in which the concentration of stuff is two grams per liter, can be compared with one another. The aforementioned diagrams clearly show that varying concentration of the stuff causes far greater variations in the final results than the variation in the mesh of the screen. H. E. Joergensen, Papir Journalen, volume 16, pages 239ff.

Producing Cellulose Pulp

THE raw cellulosic material is digested under atmospheric pressure at temperatures materially in excess of 212 degrees Fahr. An aqueous cooking liquor is used consisting of fiber-liberating chemical and a water-miscible body permitting the attainment of such temperatures at such pressure. The cooking liquor may be a sulphurous acid solution of a soluble salt containing a barium salt in sufficient proportion to precipitate an insoluble barium salt in the liquor when sulphur dioxide is released from the latter. The sulphur dioxide is released from the solution during the digestion to cause this precipitation.



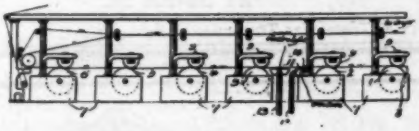
The apparatus in which this process is carried out is shown in the accompanying illustration. It consists of a pulp digester (1), which is provided with a screen (2) at the bottom. A pump (4) continuously removes the screened liquor from the bottom of the digester (1) through the pipe (3). The liquor is pumped by this pump into the indirect heater (5) through the pipe (14). A pump (10) is also provided for circulating the liquor through the heater (5) at a higher velocity than that of the liquor entering the heater, the second pump being connected to the heater by means of the pipe (8). Another pipe (11) is provided for delivering the liquor from the heater (5) into the digester (1). G. A. Richter, assignor, Brown Co., Berlin, N. H. United States Patents Nos. 1,735,013-5, filed Jan. 1, 1928, July 20, 1928 and Aug. 23, 1928.

Cogon and Rice Straw as Paper Stocks

COGON grass and rice straw are available in commercial quantities for the manufacture of paper. The yield of cogon is about twelve to sixteen tons of air-dry grass per hectare, but as the more easily accessible land will probably in the future be devoted to argiculture the difficulties of transportation will increase. Rice straw, however, is a byproduct and offers fewer transportation difficulties. Furthermore, rice straw requires only about eight per cent of soda against twenty per cent of cogon to give a bleachable pulp, and shows a higher yield. For cardboard, cogon requires digestion with at least four per cent of soda and gives a yield of 51.5 per cent of pulp (oven-dry pulp on oven-dry grass), while rice straw requires only two per cent of caustic soda and gives a yield of 55.4 per cent. Cogon paper is somewhat stronger than that made from rice straw. F. D. Reyes and A. O. Cruz, Philippine Journal of Science, 1929, volume 38, pages 367-376.

Waterproofed Paperboard

THE waterproofed paperboard is made as follows: First, the unimpregnated portion of the board is prepared. There is then applied to the interior surface of the latter



an emulsified waterproof material without an admixture of fibrous stock. The emulsion is then broken down without the application of heat to deposit the waterproof material upon the fibers in the natural state. The sheet is then dried. An electrolyte is used for breaking down the emulsion. The apparatus used is shown in the accompanying illustration. E. Bache, assignor, Waldorf Paper Products Co., St. Paul, Minn. United States Patent No. 1,735,030, filed Nov. 8, 1926.

Sulphite Pulp from Pinewood

THIS is a long article devoted to the theory and practice of manufacturing sulphite pulp from pinewood. It contains a long discussion of the work that has been done along these lines in obtaining pulp from highly resinous pinewoods and describes a large number of experiments which the authors carried out with different compositions of digestion liquor, temperatures, etc.

The following are some of the more important of the many conclusions derived from this work. Calcium bisulphite liquors can be successfully used for digestion of pinewood only in certain cases where the composition of the wood is uniform and where the wood does not contain too much resin. Under these conditions the duration of digestion is long, the pressure must be high and the acid concentration of the liquor considerable. The pulps obtained are not uniform and contain a large amount of resin.

The process is materially improved by replacing the lime entirely or in part by magnesium or alkalies. Digestion liquors which contain both magnesia and soda are particularly effective.

The irregular decomposition of the wood with sulphite digestion liquor depends principally on the difficulty with which the liquor penetrates into the wood. Besides the disturbing effect of the substances that are removed from the wood, the main cause of the difficulty of penetration into the

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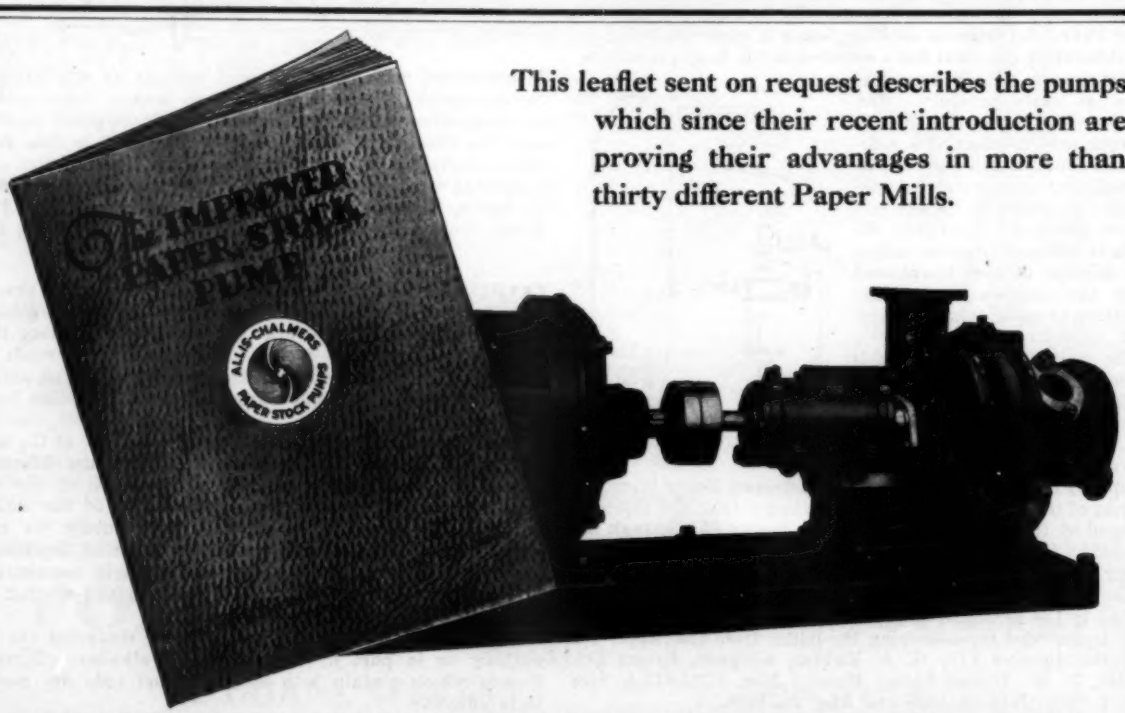

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wood is the precipitation of difficulty soluble normal calcium sulphite in the pores of the wood. This is caused by the rapid consumption of sulphurous acid. This calcium sulphite is decomposed towards the end of the digestion process and brought into solution only then in the presence of stronger acids.

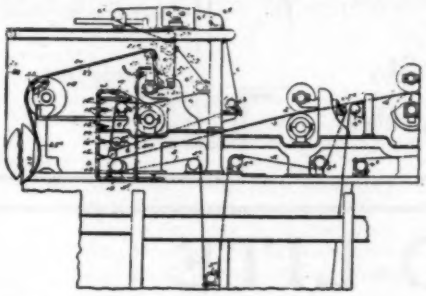
The addition of alkali salts of weak acids, such as most of the organic acids or phosphoric acid, considerably reduces the time of digestion of pinewood. The yield is better and the quality of the pulp improved. The resinous substances in the wood are more easily dissolved out, but there is still sufficient resins in the pulp to make the process only partially effective.

The simplest way of removing this excess resin is to treat the pulp in a beater with sodium hydroxide solution. The weight of the caustic soda added is from half to one per cent on the weight of the pulp.

The nitric acid process can be used in digesting pinewood, provided the chips are not too large. A good quality pulp is obtained. The fiber is not attacked by the acid and injured. Practical conditions which mitigate against the use of this process are the high cost of the chemicals and the formation of hydrocyanic acid during digestion. O. Routala and J. Sevon, Cellulosechemie, 1929, pages 98 to 106.

Papermaking Machine

THE feature of this papermaking machine, as shown in the accompanying illustration, is a pair of rope-passes which extend between the press and the dryer and are ar-



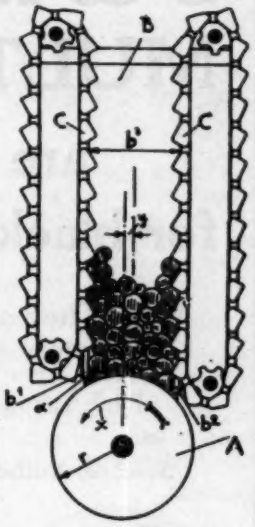
ranged to engage the paper web at the press and take it over to the dryer. R. E. Read, White Plains, N. Y., assignor, International Paper Co. United States Patent No. 1,734,879, filed Aug. 17, 1927.

Coated Paper

THE paper is coated in the form of a web or sheet with an aqueous slurry. The slurry contains raw starch and a pigment. The coated paper is then subjected to sufficient heat without substantial drying so as to gelatinize the starch. The paper is then dried and finished in the usual manner. The wet coated paper is heated by contact with saturated steam in order better to gelatinize the starch. D. B. Bradner, assignor, The Champion Coated Paper Co., Hamilton, Ohio. United States Patent No. 1,733,524, filed Nov. 8, 1926.

Wood Grinder

THE pressure feed pockets are arranged eccentrically with respect to the grindstone, so that the load on the two walls of the pockets, perpendicular to the direction of grinding, is as uniform as possible. According to the accompanying illustration, a shaft or pocket (B) is arranged over the grindstone (A) for feeding the logs or blocks to the latter. A number of lugs (C) are arranged in chain form to aid in the feeding process by engaging and pressing the logs against the stone. In contradistinction to the devices which have been known up to the present time, the plane through the middle of the mass of wood in the pocket (B) does not pass through the axis of the grindstone (A), but to one side, and in such a manner that the wood pocket (B) is shifted opposite to the direction of the rotation of the grindstone (A), which takes place in the direction of the arrow (x), from its usual position in the center of the pocket, by a quantity or distance (y). This shifting of the position of the plane is, nevertheless, not so great that the chain (C) which serves to press the logs against the grindstone, is pushed aside so that contact is not made with the grindstone. This means that (y) must be less than (r) which is itself equal to ($b^3/2$), if (r) is the radius of the grindstone and (b^3) is the active width of the pocket.

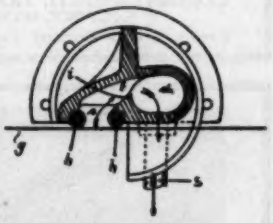


It has accordingly been found that when the stone (A) and the pocket (B) are symmetrically arranged, the strain on the lower side walls (b^1) and (b^2) of the pocket (B) is different, and this difference engenders the force that is exerted on the wood through the rotation of the stone so as to move the wood to one side. It was also found that the pocket wall (b^1) is more strongly affected by the internal pressure of the logs at the point of exit at the grindstone than the opposite side. This condition exists more strongly, the wider the pocket, hence the sharper the angle which the wall of the pocket makes with the tangential plane at the grindstone at the point of contact.

The new form of grinder meets this disadvantage in the following manner: The pocket (B) is arranged over the grindstone (A) in the afore described manner, so that the angle is less acute than in other instances. Inasmuch as the great width of the pocket plays an important role in the new form of wood grinder, this circumstance is of great importance, considering the considerable pressure which is engendered during the process in pressing the wood against the grindstone, for the resistance of the wood pocket. G. Soederlund, Sweden. German Patent No. 491,422, filed September 11, 1925.

Suction Roll on Papermaking Machine

THE new suction roll exerts its suction action from bottom to top. The water that is removed from the wet paper web which comes into contact with the roll is removed in such a manner that it does not disturb the operation of the apparatus. As may be seen in the accompanying illustration, the suction roll consists of a suction chamber (c), which is in direct contact with the felt, which carries the paper web, or the wire (g) which may also carry it. The elements (h) serve to make tight the roll. The suction roll also contains a chamber (d) through which the water and air are carried away. The water, which is removed from the wet web, is lifted into the chamber (d) through the roll over the separating wall (i), which prevents the water from flowing back into the suction chamber (c). Ribs (f) are arranged within the suction chamber (c), which facilitate the flow of the water out of the chamber (c) into the chamber (d). These ribs also prevent the water from flowing over the suction surface directly to the suction supports (s), through which water and air are removed by means of a wet air suction pump. C. Mueller, Switzerland, Ger. Pat. No. 481,048, filed Mar. 3, 1927.



New Method of Determining Copper Number

A MODIFICATION of the Schwalbe-Braidy method is described which reduces the limits of error and gives results which are comparable with those obtained by the Schwalbe-Haegglund method. Larger quantities of water are

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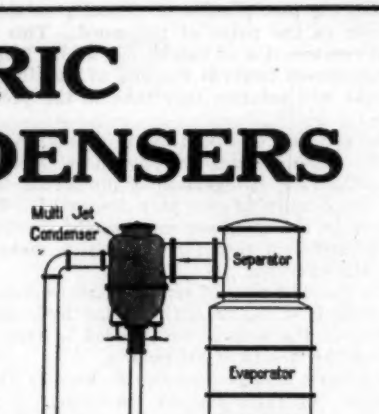

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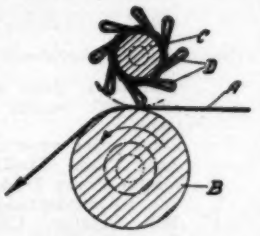
used in transferring the broken-up cellulose material to the flask in which it is treated with copper solution. The effect on the copper number of using different amounts of water in this operation is shown, and the results obtained by the Schwalbe-Braidy and Schwalbe-Haegglund methods are compared for a variety of different cellulose materials. According to the procedure recommended, 2½ grams of cellulose are steeped in 50 cc. of water, shaken with glass beads, washed into an Erlenmeyer flask with 50 cc. of water. The contents of the flask are heated to a temperature of 100 degrees C. and a boiling Braidy solution (10 cc. of copper sulphate and 190 cc. of carbonate-bicarbonate solution) is added. The copper number determination is then carried out in the usual manner. K. C. Jonas and A. Drossel, Der Papierfabrikant, 1929, number 27, pages 109-112.

Paper Conveying Device in Paper Cutter

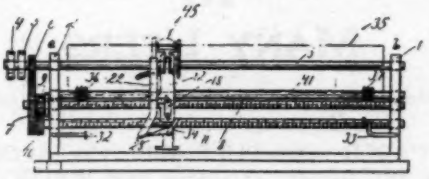
THE paper web (A) in the new device is grasped from below by the roller (B). The upper roller (C), on the other hand, does not itself rest on the paper web, but grasps it only by means of the wings (D), which are arranged around the roller and which are directed against the web by means of centrifugal force. The wings (D) are moreover made in such a fashion that they give. These wings are made in various ways either of single strips of material or of combinations of strips. The materials used may be felt, rubber, linoleum, cardboard or the like. The wings (D) may be made of a single piece which runs across the width of the paper web or they may be made in several parts. These wings exert a gentle stroking action against the surface of the paper web, which makes it possible to smooth out any irregularities which may exist in the latter.



In order that the paper web may attain the necessary speed, one or both rollers may be accelerated, which means that the speed of the roller may be made about twenty-five per cent greater than the speed of the feed of the paper web. G. Strecker and T. Goeckel. German Patent No. 481,988, filed Feb. 23, 1928.

Bark Removing Machine

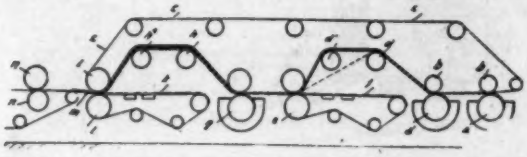
MEANS are provided for supporting the log so that it can be rotated. The bark is removed from this log by the traveling cutter, shown at (45). Suitable drive is



provided for moving the cutter parallel to the axis of the log in either direction. The movement of the cutter can be stopped and started again at any time during its travel. The feature of the debarking machine consists in the facility with which the cutter can be manipulated. K. R. J. Lagus, Abo, Finland. United States Patent No. 1,736,924, filed July 14, 1927.

Double Paper on Multiple Wire Machine

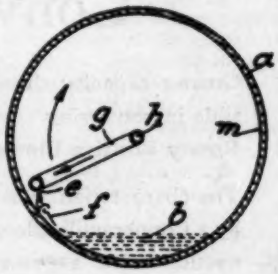
AS the accompanying illustration shows, a single felt (c) is arranged over a series of fourdrinier and cylinder machines (a), (f), (g) and (k) which are placed one after the other. The paper web from the cylinder machine (a) and (a^1) is passed over the couch rolls (b) and (b^1) to the felt (c) and then over the suction section of the fourdrinier machine (f) to the couch roll (e). One or two guide rollers (d) and (d^1) are provided for this purpose. As the wet paper web runs underneath the felt (c) on to these guide rollers, the latter allow the water to run through them, so that the paper web does not adhere to the guide rollers. This paper web is joined with the paper web which is made in the part of the machine (f) on the couch roller (e) and



it takes up the fourth paper web from the wire section (g) and the combined webs are then carried over the perforated guide rollers (h) and (h^1) to the fourdrinier machine (k) to the couch roller (l). The paper web cannot adhere to the guide rollers during this process. O. Leonhardt, Germany. German Patent No. 481,122, filed August 2, 1925.

Improvement in Steam Heated Drying Cylinders

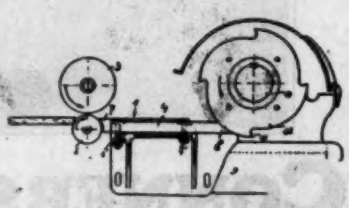
A PART of the water of condensation, which collects in the lower part of the cylinder, is carried along by the walls of the cylinder upwards at a certain speed of rotation of the cylinder. This is due to the frictional effect of the cylinder walls. The result is that shortly after the cylinder starts operating, the entire inside wall of the latter is covered with a film of water. This film of water renders the interchange of heat a very difficult process, for the heating medium in passing through the film of water naturally has to lose some of its heat to the latter.

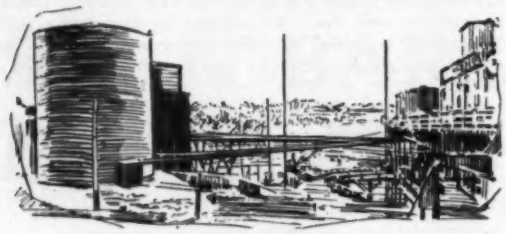


The device, which is seen in the accompanying illustration, is intended to overcome this difficulty. This device consists of one or more steam pipes (g) which are distributed throughout the length of the cylinder and which are fixed in position. These steam pipes branch off from the common steam feed pipe (h). The tube or pipe (g) either feeds the entire quantity of steam to the cylinder, or a special arrangement is used for this particular purpose. The steam feed pipes (g) end close to the surface of the water of condensation collected in the bottom of the cylinder and are provided at their lower ends with nozzle-like openings (e). Steam flows through these openings in a definite oblique direction and impinges against the inner cylinder wall (m), with the result that it forces back any water which tends to be carried along on the wall of the cylinder by its rotation. This is indicated in the illustration, the adhering water being shown at (f). Hence the wall of the cylinder (m) remains essentially free from water and is well surrounded with steam so that the transmission of heat through it to the paper web that passes around it is unhindered. Linke-Hofmann-Busch-Werke A. G., Abt. Fuellnerwerk, Germany. German Patent No. 480,134, filed August 8, 1927.

Disintegrating Device

THIS new device is shown in the accompanying illustration. A feed roll (2) is arranged on a table (1). An adjustable roll (3) is arranged over roll (2). Both of these rolls serve to feed the stock on the right side of the table. A number of flat steel strips (4) are arranged in the table. These are fastened to the table by means of clamps and bolts (5). The under-side of the table consists at (7) of a massive wooden piece, on which the stock, which is to be disintegrated, arrives. The flat steel strips protrude above the edge of the top of the





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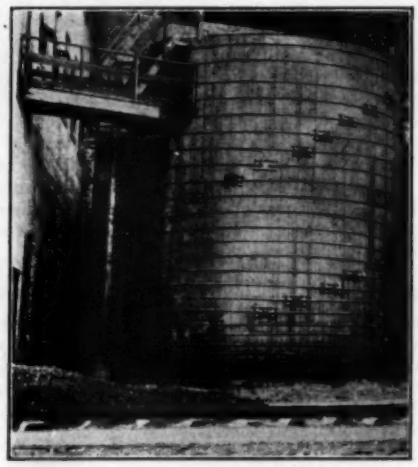

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table at (8). A shaft (10) is journaled on the support (9) and a number of saw teeth (11), attached to discs (12) are arranged around the shaft. These discs are distributed in such a manner that they move between the steel strips (4) which are in reality knives.

The material, which is to be disintegrated, is moved forward on the table and is cut up into pieces the size of a silver dollar by the saw teeth of the discs (12). The table (1) is adjustable as far as height is concerned with respect to the shaft (10), so that the direction, in which the saw teeth pass through the stock, can be changed. This makes possible the control of the size of pieces into which the stock is cut. G. Andrews, Germany. German Patent No. 481,423, filed June 2, 1926.

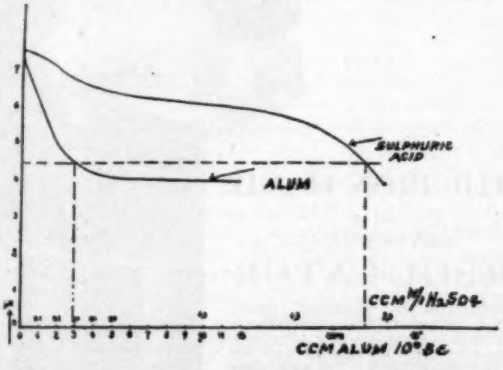
Determining Sulphur Trioxide in Burner Gases

THE author uses for this purpose a well closed Wulff flask which is also provided with a separatory funnel. The flask is carefully exhausted with steam. The use of a high vacuum pump for this purpose is simpler. After the flask has been allowed to cool off, the quantity of water, which is sucked in by the exhausted flask, is measured off. The gas is collected in the same manner. A definite quantity of a standardized iodine solution is then allowed to flow into the flask from the separatory funnel until the gas has been completely absorbed. The excess iodine solution is then titrated back with the aid of a standardized solution of sodium thiosulphate and the acid formed is thereafter titrated with the aid of a standard solution of sodium hydroxide. The content of sulphur dioxide and sulphur trioxide in the gas can then be calculated. The original article contains examples of analysis and calculation. Konopatzkij, Bumaschnaja Promischlennost, volume 7, page 2086ff.

pH Control and Rosin Difficulties in Papermaking

PH control has been found to be highly useful in overcoming certain difficulties arising in the use of rosin for paper sizing. Both the colorimetric and the electrochemical methods were used. The general details of the methods are described. The author is of the opinion that each paper mill has to carry out its own investigation to determine the causes of the difficulties of rosin sizing and the remedies that may be required.

The author holds that the rosin is carried along with the stock to the papermaking machine in a more or less harmful



state. This rosin must be worked out of the machine with the paper web without being deposited on the wire, felts or press rolls. In other words this harmful rosin must be fixed on the paper fibers. The fact that the operations on the papermaking machine are rightly considered in many ways as chemical has not been given sufficient consideration.

The author discusses in considerable detail the state of the rosin in the stock and the influence that the addition of alum and the pH value of the water used have on rosin sizing. He explains how mensuration of the pH value can materially help in regulating the condition of rosin sizing so that best results can be obtained.

It has been found that when the rosin in rosin milk is precipitated on the paper fibers with the aid of sulphuric acid only, the paper is not sized, due to the fact that the rosin milk is coagulated and the rosin adheres to the paper fibers only in a mechanical manner. This method can be used for treating paper that is used for printing purposes on the rotary press. Tests were made in which about half of the alum, ordinarily required, was replaced with sulphuric acid. In order to obtain an idea of the sulphuric acid required, a liter of fresh water (pH value 7.5) was treated with increasing amounts of alum (10 degrees Be. concentration) and normal solution of sulphuric acid. One cc. of the alum solution requires 1.45 cc. of normal sodium hydroxide solution for exact neutralization. The results are given in the curve diagram. The results revealed that the method was not so simple as might be expected and that difficulties arose in the manufacture of the paper due to deposition of rosin in the paper machine. The net conclusion of additional tests was that the replacement of half the alum by sulphuric acid was not unfavorable as far as the pH value of the paper is concerned. R. Karlberg, Der Papierfabrikant, 1929, pages 358-

The Action of the Ultra-Violet Ray in Bleaching Pulp

THE quantity of heat required in bleaching pulp at a stock concentration of five to eight per cent at the ordinary bleaching temperature is considerable. Attempts have been made to produce the same effect by the addition of sulphuric acid or by increasing the concentration of the stock. Experiments, which were carried out in remarkable detail, on the effect of the ultra-violet rays, have shown that ultra-violet light reduces the duration of the bleaching process. On the other hand, the consumption of chlorine is increased due to the formation of chlorate, and at the same time the cellulose is decomposed in part. This latter action is not of sufficient importance to materially affect the usefulness of the pulp for the manufacture of paper. The pulp which is bleached under these conditions cannot however be recommended for use in the manufacture of rayon. Escourrou, Le Papier, 1929, pages 55-71.

Recovering Sulphur Dioxide from Digester Waste Gas

THE waste gases and the condensates from digesters are collected after cooling in a suitable holder. The acid gases, which are not absorbed in this holder pass from the holder to another which feeds gas for tower liquor. When the recovered gases are not sufficiently absorbed, a portion of the latter enters the tower. The liquors obtained from the condensates and from the tower are united and fed simultaneously to the digester. When the recovered gases are not sufficiently cooled down, a portion of the same reaches the tower. The cooler must be increased in capacity under these conditions and careful tests were made on the apparatus before and after it was rebuilt.

It was found that the result of rebuilding the cooler was higher concentration of the recovered acid, while the concentration of the tower liquor was somewhat decreased and that acid content of the finished digester liquor was a little greater. The quantity of recovered acid was somewhat greater. This is also explained by the fact that the concentration of the finished liquor was somewhat greater, while the consumption of acid for digestion of the wood remained unchanged. The reconstruction of the cooler improved the cooling action to a very considerable degree. The temperature of the condensates was reduced from 60 to 95 degrees C. to 30 to 50 degrees C. The rebuilding of the cooler did not however eliminate all the difficulties in the recovery plant.

The tower liquor had to be collected in three tanks which were interconnected. The first tank was used for collecting the tower liquor, the second for the treatment of the same with sulphur dioxidegas and the third as a storage tank. The concentration of the acid was somewhat increased, up to approximately 3.2 per cent, which is nevertheless still a very dilute digestion acid. Rosenberg and Larin, Bumaschnaja Promischlennost, volume 7, page 2052.

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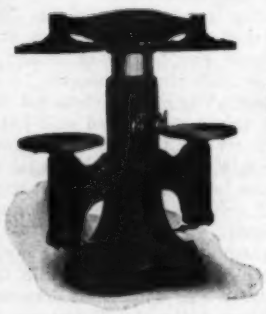

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New York, January 2, 1930

THE paper industry starts the new year apparently in a favorable position. There are numerous indications that business in paper during the next few months will measure up to fully normal, and that in all likelihood it will exceed normal volume. The industry is in a healthy state from a statistical standpoint. There is every sign that stocks of paper of practically all kinds are small, not only at mills and in the hands of distributors and jobbers but also in consuming and converting establishments, particularly since manufacturers for sometime have been regulating their production in keeping with the demand of the market, and exerting effort to keep their own surplus stocks on a lower level than they had been accustomed to carrying.

Also, there appears every reason to believe that demand for paper will develop in a consistent manner and in excellent volume during the next few months. Economists, business men, bankers and manufacturers in general are predicting good business during the first half of 1930; few expect that there will be any great rush of buying of any commodities, since it is felt that consumers, retailers and wholesalers will proceed cautiously in the conduct of their affairs, but emphasis is put on the stability of the commercial structure, on the sound money conditions, and on the pronounced deflation in commodities, and it is contended that this will lead to good, steady development of business which will keep the manufacturing and other industries of the country well engaged. Obviously, if this proves to be the case, business in paper of various classes should be satisfactory because demand for paper is so dependent on so many lines that if general business is good, consumption of and demand for paper should be good in like proportion.

The price situation in paper also is encouraging. The industry is beginning the new year with prices of nearly all kinds of paper on a comparatively low level; in some instances prices are under what it is believed they should be when manufacturing costs and other factors are taken into consideration, and it is therefore probable that if there is any fluctuation in prices of paper over the next few months it should be upward. And common opinion in trade circles is that if business arises in the volume that is looked for, it is quite likely that market prices will strengthen somewhat.

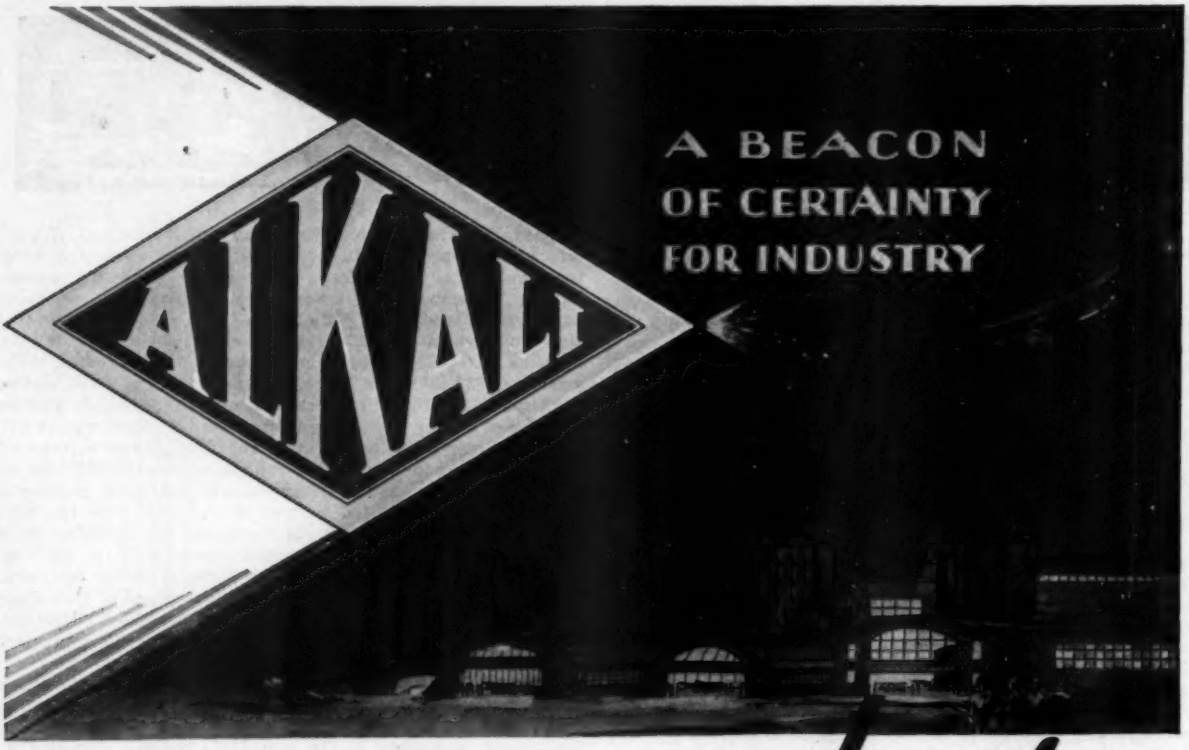
According to identical mill reports to the American Paper and Pulp Association from members and co-operating organizations, paper production in the United States in October registered an increase of 12 per cent as compared with the preceding month, and an increase of 7 per cent over October, 1928, the output amounting to 619,897 net tons in October, against 551,250 tons in September last, and 617,944 tons in October, 1928. Production during the first ten months of 1929 showed a gain of 7 per cent over the same period in 1928. The October production for all individual grades excepting newsprint, felts and building, and bag and wrapping papers registered an increase over the October, 1928, output. Shipments from mills in October reached a total of 625,143 tons, compared with 550,874 tons in the preceding month, which means that the October shipments exceeded the production in that month by some 5,000 tons, with the result that stocks of paper at mills declined from a total of 255,314 tons at the end of September last to 249,699 tons at the end of October.

There was a slight decrease in newsprint production in November as compared with October. Newsprint output in the United States and Canada totaled 365,775 tons in November, against 373,923 tons in the preceding month, the U. S. mills making 113,729 tons and shipping out 116,726 tons, contrasted with 122,009 tons manufactured and 122,040 tons shipped in October, while Canadian mills produced 252,046 tons and shipped 253,219 tons in November, against 251,913 tons and 252,591 tons respectively in the preceding month. During November, 22,151 tons of newsprint were produced in Newfoundland and 1,652 tons in Mexico, so that the total North American output for the month amounted to 389,578 tons, against 399,491 tons in October. The Canadian mills produced 322,130 tons more newsprint in the first eleven months of 1929 than in the same time of 1928, which was an increase of 15 per cent. The United States output was 19,177 tons or 1 per cent less than in the first eleven months of 1928, while production in Newfoundland was 22,306 tons or 11 per cent more, and in Mexico 2,146 tons more, making a total increase of 327,405 tons or 9 per cent over the first eleven months of 1928. During November the Canadian mills operated at 91.2 per cent of rated capacity, U. S. mills at 77.6 per cent, and Newfoundland mills at 108.1 per cent. Stocks of newsprint at Canadian mills at the end of November totaled 28,891 tons, and at United States mills 23,549 tons, making a combined total of 52,440 tons, which was equivalent to 3.2 days' average production.

Paperboard production in the United States scored a sharp gain in October as compared with the preceding month, reaching a total of 264,631 net tons, against 235,962 tons in September, according to the monthly summary compiled by the U. S. Department of Commerce. Board output in the first ten months of last year aggregated 2,488,724 tons, contrasted with 2,236,975 tons in the similar period of 1928. New orders received by manufacturers during October called for 264,338 tons of board, against 247,329 tons in September, and unfilled orders held by mills at the end of November were for 85,600 tons, compared with 87,304 tons a month previously. Shipments of board from mills in October totaled 268,494 tons, contrasted with 240,349 tons in the preceding month, and mill stocks of board were 59,244 tons at the end of October, against 58,709 tons at the end of September.

The effort of Canadian manufacturers to raise the contract price of newsprint paper $5 a ton for 1930 apparently has fallen through, and the same price of $55 a ton f.o.b. paper mills on standard newsprint seems likely to obtain over at least the first half of 1930. Several of the large producing companies in the Dominion had announced the advance in price, but when the International Paper Company failed to fall in line with other manufacturers and advised publishers that it would maintain its present price basis during the first six months of this year, the move to increase prices more or less collapsed, although the matter is as yet still somewhat unsettled in some quarters. Indications are, however, that the subject of a higher price for newsprint will again come up at the middle of 1930, and it is not at all improbable that at that time the move for establishing a more profitable price for manufacturers will be successful.

The market has shown rather limited activity in recent weeks, as ordinarily is the case toward the close of the year. Consumers, jobbers and other buyers have been careful in their market operations while bent on keeping stocks low for inventory, and demand has been confined almost entirely to bare wants. Wrapping paper has moved relatively well and at maintained prices, as has tissue and other kinds of paper which enjoy heavy consumption during the pre-holiday period. Fine papers have been moderately active although demand has been chiefly routine in character and scope. Book paper continues to move steadily into consuming channels, whereas the market for boards has quieted decidedly. Reports say that contracts and orders for the new year have been of appreciably large tonnage, and altogether gratifying to paper manufacturers and distributors.



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Papermaking Rags

This is the season when demand for rags, along with other kinds of raw material, from paper mills is temporarily slow, and there has been a lack of important activity in the market lately. Paper manufacturers have been engrossed with year-end inventories and repairs and other matters, and have been more desirous of keeping their stocks of raw material down than in augmenting them, and such buying as has been noted recently has been almost entirely against actual and immediate requirements, with the result that mill orders for rags have been limited as to number and also as to volume.

However, quoted prices have undergone little change, and while mainly nominal at present, are on about the same levels as last reported. Dealers have not pressed to sell, appreciating that consuming customers have not been in a mood to absorb supplies, and also themselves being busy with inventories and other tasks apropos of the ending of the year and the beginning of a new. Such buying as has been done nevertheless has been at slight concessions, as dealers have been satisfied to shade prices in order to liquidate their stocks at the close of the year. Statistically, it is declared the market is in a fairly strong position. Collections of rags the country over have been rather restricted, due in good part to the heavy snow-storms in numerous sections, and stocks in the hands of graders and dealers are said to be well under normal. Also, importations of papermaking rags have fallen off recently, since prices ruling abroad are reported to be relatively above those to be obtained in the American market, so that U. S. importers have experienced difficulty buying in Europe at advantageous prices, and exporters on the other side of the Atlantic have not been eager to accept orders from America at the rates bid. This has been particularly true as concerns roofing rags, importations of which grades have decreased during the last few weeks.

Dealers in new cotton cuttings are pursuing a waiting policy and are not pressing to effect sales at the moment. Quoted prices are well maintained, although it is apparent that buyers are managing to get some cuttings at a little below asked figures. New No. 1 white shirt cuttings are reported available at 9.50 cents per pound f.o.b. New York, and perhaps in some cases at slightly less than this price, while dealers ask 6.25 to 6.50 cents a pound for fancy shirt cuttings, 11 cents for new unbleached cuttings, 8 cents for light silesias, 7.75 cents for new blue overall cuttings, 9.75 to 10 cents for bleached canton flannels, and 5 cents for No. 1 washables.

Roofing rags are down to where No. 1 domestic stock or cloth strippings is reported offered to mills at 1.75 to 1.80 cents a pound f.o.b. dealers' shipping points, and No. 2 domestic at 1.25 cents and probably at 1.20 cents. Foreign dark colored cottons are eliciting bids from consumers of only about 1.55 cents a pound ex dock New York, but importers assert that it is difficult for them to buy these rags abroad at costs enabling them to dispose of them to mills on this price basis. Old white cottons are quoted at around 6 cents a pound f.o.b. New York for No. 1 repacked whites of New York City origin, with dealers out through the country usually asking above this price, while No. 2 repacked whites are reported available at 2.75 to 3 cents per pound at shipping points. Repacked thirds and blues are holding their price position at 2.50 to 2.75 cents a pound at dealers' shipping points, and miscellaneous blues are quoted at around 1.90 cents per pound.

Quoted rates on imported rags are maintained with few changes, and importers are not exerting extra effort to make sales at the prices papermakers are inclined to bid, most of which are on levels which net importers little or no profit in handling such rags, it is declared.

Average quotations f.o.b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	9.25– 9.75
White shirt cuttings, No. 2	6.50– 7.00
Fancy shirt cuttings	6.25– 6.50
Washables, No. 1	5.00– 5.25
Unbleached muslins	10.75–11.00
White lawns	9.00– 9.25
Overall cuttings, blue	7.75– 8.00
Black silesias	4.75– 5.00
Canton flannels, bleached	9.75–10.00
Canton flannels, unbleached	8.50– 8.75
Shoe cuttings, bleached	7.50– 7.75
Shoe cuttings, unbleached	6.50– 6.75
Light silesias	8.00– 8.25
O. D. khaki cuttings	6.00– 6.25
Mixed khaki cuttings	5.00– 5.25
Corduroy cuttings	3.25– 3.50
Cottonade cuttings	3.00– 3.25
Linens, No. 1 white, foreign	14.00–15.00
Light prints, foreign	4.00– 4.50
Old stock—	
Whites, No. 1, repacked	5.50– 6.50
Whites, No. 2, repacked	2.75– 3.00
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.85– 2.00
Lace curtains	5.00– 5.25
Thirds and blues, rough	1.80– 2.00
Thirds and blues, repacked	2.50– 2.75
Black stockings	4.10– 4.25
Cotton canvas, No. 1	4.25– 4.50
White cotton batting	2.50– 2.75
Roofing, No. 1 (cloth strippings)	1.75– 1.80
Roofing, No. 2	1.25– 1.35
Linsey garments, foreign	1.80– 1.85
Dark colored cottons, foreign	1.55– 1.60
Blue linens, foreign	4.00– 4.50
Gray linens, foreign	4.50– 5.00
White linens, foreign	8.00– 9.00
Light prints, extra, foreign	2.50– 2.75

Rope and Bagging

Not much market activity is current in old rope and scrap bagging at present. There is, of course, a certain amount of routine buying being done by paper manufacturers, but the business developing is of a character having scant influence on the quotable position of either rope or bagging. In fact, prices in certain instances have moved off slightly, as for example, old rope is down on an average of $5 per ton, due to papermakers having reduced prices while evidently figuring that they could buy cheaper during the holiday and inventory season. Domestic No. 1 old manila rope is bringing 4.75 cents a pound f.o.b shipping points, and it is stated that it is probable that some purchases have been effected down to 4.50 cents, while consumers manifest little disposition to pay more than 4 cents a pound ex dock New York for No. 1 foreign old manila rope.

No. 1 scrap bagging continues to fetch about 1.60 cents a pound at dealers' points of shipment, and paper mills in some cases are granting a little in excess of this price for extra desirable packing. Gunny is in slow demand, and rather tending downward in price. Roofing bagging is reported

Lindsay Spiral Weave Fourdrinier Wires

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Represent the latest idea in paper machine wire cloth.

They prevent grooving of Suction Boxes, scoring and filling up of seams. This overcomes the necessity of planing the suction box covers and adds to the life and tonnage of the wires.

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available at 1.20 cents a pound at shipping points, and perhaps at a shade less.

F.o.b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.50– 1.60
Gunny, No. 1 foreign	1.45– 1.50
Scrap bagging, No. 1	1.60– 1.65
Roofing bagging	1.15– 1.20
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	4.00– 4.25
Manila rope, No. 1 domestic	4.75– 5.00
Sisal strings	1.75– 2.00
Mixed strings	.90– 1.10

Old Paper

Insofar as regards the low grades of old paper, there seems to be just one word which correctly describes the market situation and that word is "sick." Paper and board mills consuming mixed paper, news grades and the other cheaper classes of waste paper are engaging in very limited buying of these grades, and with something of a surplus in the market, prices are weak, to say the least, and there is no saying at just what low prices purchases can be effected. It is known that No. 1 mixed paper has been bought by board mills at as low as 20 cents per hundred pounds out of New York, f.o.b. that city, and that folded news has sold down to 40 cents New York. Somewhat higher prices than these prevail in the Middle West market, and yet prices even in this section are comparatively low.

The higher grades of old paper are ruling relatively steady in price and are meeting with a proportionately better sale. Hard white shavings of extra quality and containing a good percentage of rag stock are reported bringing up to 3 cents a pound or close to that price f.o.b. shipping points, and soft white shavings are selling at around 2.50 cents, with 2.80 cents and more asked for one-cut quality. No. 1 heavy books and magazines are fetching 1.35 cents a pound f.o.b. New York, old No. 1 kraft paper around 1.70 cents, ledger stock from 1.15 to 1.40 cents, according to the packing, while a firm item is white blank news cuttings which are bringing 1.75 and 1.80 cents a pound New York without difficulty.

The following are quotations named by dealers f.o.b. shipping points, some of which are mainly nominal:

	New York and Chicago
Hard white shavings, No. 1	2.60– 3.00
Hard white shavings, No. 2	2.40– 2.60
Soft white shavings	2.40– 2.90
Colored shavings	1.00– 1.25
Heavy book, No. 1	1.30– 1.40
Crumpled book, No. 1	1.00– 1.10
Ledger stock	1.15– 1.40
Kraft No. 1	1.60– 1.75
New kraft cuttings	2.40– 2.60
White blank news	1.75– 1.85
Manilas, No. 1	.60– .75
Manilas, container	.40– .50
Folded news	.40– .55
Sulphite mill wrappings	.65– .75
Old corrugated boxes	.45– .55
New corrugated box cuttings	.70– .80
Mixed paper, No. 1	.20– .35
Common paper	.20– .25

Pulpwood

The market for pulpwood is firm of tone, although there is not a great deal of current activity noted. Consumers are absorbing supplies regularly as they come forward from cutting sources, and, of course, operations in the woods are increasing as the winter progresses. So far as has been ascertained, no changes have occurred in ruling market quotations.

During the first eleven months of 1929 exports of pulpwood from Canada, practically all of which came to the United States, amounted to 1,227,879 cords, valued at $12,619,783, showing an appreciable decrease from the 1,482,598 cords of

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NEKAL B EXTRA

An ideal wetting-out and softening agent for new and old press felts. An effective cleaning agent in place of sulphuric acid. Strictly neutral.

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SUPERIOR ROSIN SIZE
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INDUSTRIAL CHEMICALS

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LOCKPORT, N. Y.
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PENSACOLA, FLA.
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BURLINGTON, ONTARIO
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Executive Offices:
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Works: Philadelphia and Natrona, Pa.
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Clean Pipe Lines All of the Time

Slimy pipe lines mean dirty paper and consequently —waste.

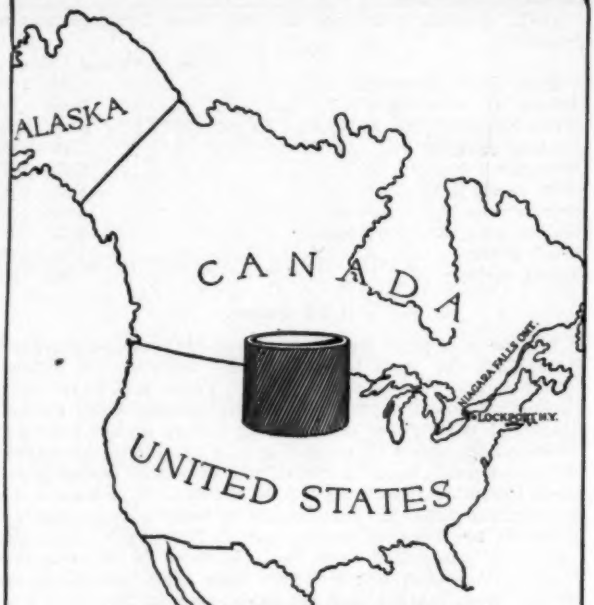
It is easy to avoid this trouble with the Hayton Go-Devil. This instrument cleans pipe lines mechanically with no trouble and in a short time. Just insert the Go-Devil in the pipe, turn on the fresh water and out the other end comes all of the slime.

The propeller-like blades of the Go-Devil revolve against the pipe walls scraping off the fungus, leaving a clean line. By means of a strong flexible spring the bends are negotiated with ease.

We will gladly furnish any further information you may desire

HAYTON PUMP AND BLOWER CO.

Appleton, Wisconsin



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PAPER & PULP MILL SPECIALTIES

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2. Acidmaking
3. Cooking
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5. Dewatering
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For: Paper Machinery, Ltd.
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Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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75 E. 45th Street New York City
Mines: Gulf and Newgulf, Texas

a value of $15,805,576 exported in the corresponding period of 1928.

Mechanical Pulp

With available supplies in nearly all producing quarters, but particularly among domestic grinders, scarce, and with demand keeping up at a consistent pace and perhaps some of it remaining unfilled, a firm market decidedly exists for groundwood. Since domestic groundwood is so hard to locate in usual tonnage, consumers are directing most of their attention to Canada in their efforts to cover their needs, and there is every indication that Canadian producers are well sold up and have little pulp to divert to the transient trade, so that prices are firm and are displaying an upward tendency. Canadian grinders ask $32 and $33 per ton f.o.b. pulp mills for prime groundwood, and are reported obtaining these prices without trouble, though it is true that in cases where grinders are situated at far-off points and a higher freight is involved purchases are being made at a little lower f.o.b. pulp mill basis than this. Domestic groundwood is nominally around $33 a ton in price, while Scandinavian groundwood is quoted at $35 per short ton for dry and $32 for moist pulp ex dock American Atlantic ports.

During October, mills in the United States produced a total of 79,900 tons of groundwood, compared with 66,431 tons in the preceding month, but in spite of this increase in output, mill stocks declined from a total of 69,335 tons at the end of September to 57,695 tons at the end of October, according to American Paper and Pulp Association statistics. Mill stocks at the end of October were smaller than have been known in more than a year, and reflected the heavy consumption in that month, domestic mills using 91,761 tons during October, or 11,000 tons more than was produced in this country in that month.

Chemical Pulp

Chemical wood pulp is moving into consuming channels in a steady manner, although current market activity has simmered down recently or since consumers began retrenching in their buying apropos of the year-end inventory period. Prices of most grades of domestic pulp are maintained quotably, but the tendency is rather downward, and such slight changes as have been noted have been in a lower direction—domestic pulps reflecting in some measure the softness that has developed in prices of certain classes of imported chemical pulp. Bleached sulphite is reported available at 3.75 cents per pound f.o.b. pulp mills, and in some quarters at slightly under this price, it being stated that producers in the Northwest are exerting some pressure to sell bleached sulphite. Unbleached sulphite is quoted at 2.50 cents to a bit higher for newsprint grade, and 2.75 to 3 cents for book qualities. Domestic bleached soda pulp is on a price basis of around 3.50 cents per pound delivered paper mills, and No. 1 domestic kraft pulp is reported available at 2.75 cents at producing plants.

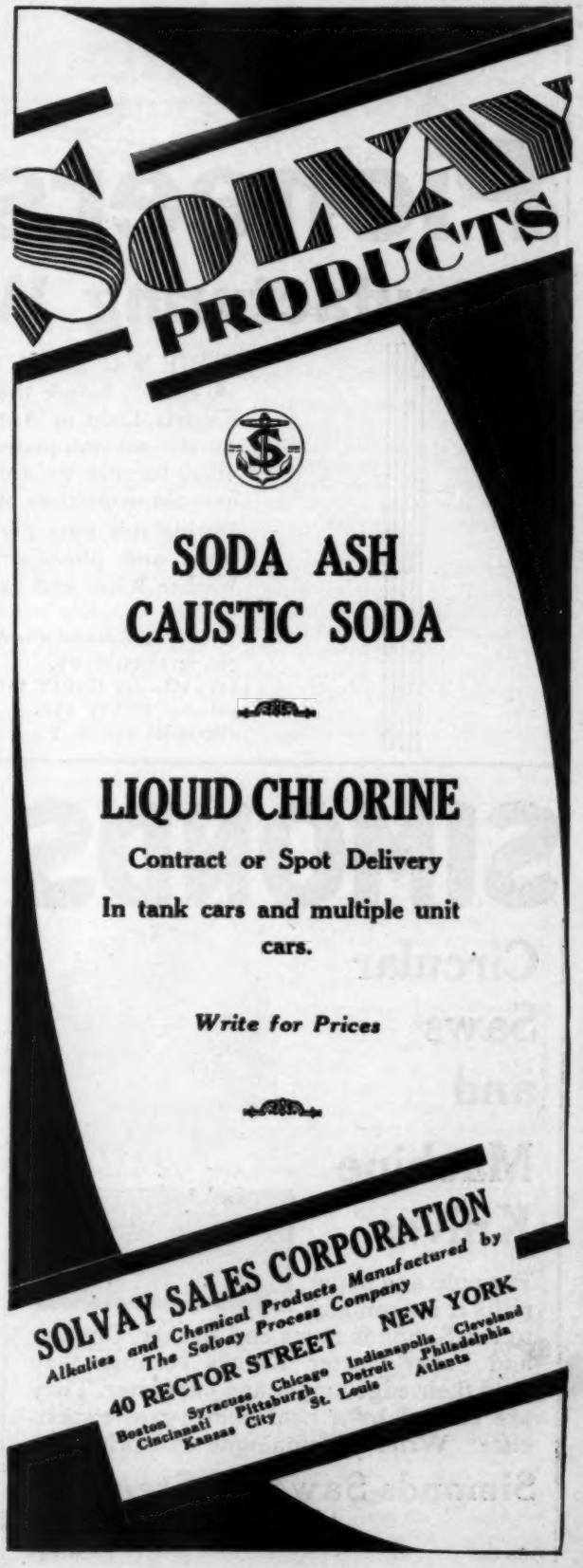
Production of chemical pulp in the United States during October totaled 138,393 tons, according to the American Paper and Pulp Association, compared with 123,991 tons produced in the preceding month by identical mills. Mill stocks at the end of October amounted to 20,868 tons, against 21,066 tons a month previously.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	3.50–4.75
Easy bleaching sulphite	2.65–2.90
Unbleached sulphite, No. 1 strong (news grade)	2.50–2.75
Unbleached sulphite, No. 1 book	2.75–3.00
Soda pulp, bleached (delivered)	3.35–3.60
Mitscherlich, unbleached	3.00–3.25
Kraft, No. 1	2.60–2.85
Screenings, refined	1.60–1.85

Chemicals

Paper and pulp manufacturers have been busy recently arranging contracts for chemical supplies for the new year, and the routine movement of most chemicals has kept up in a steady manner. Quotations show very little change. Bleaching powder is maintained quotably at 2 to 2.35 cents per pound at works for shipments in large drums. Casein prices



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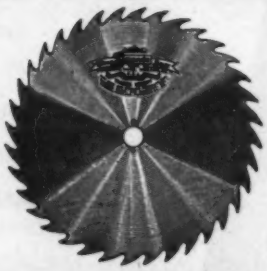

For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

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Established 1832
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PRICE & PIERCE, LTD.

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ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in Sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

New Papers

Writing—	
White rag	15–40
White sulphite	9–30
Colored rag	15–40
Colored sulphite	8–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	8–30
Colored sulphite	8–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.75– 8.00
Machine finished	5.50– 8.00
English finish	5.50– 8.00
Coated and enameled	7.50–12.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	62.00–
Rolls, transient, per ton, delivered New York	62.00–
Sheets, per ton, delivered New York	67.00–
Side runs, per ton, delivered New York	47.00–52.00
Cover stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.75– .90
No. 2 white, 24x36	.75– .90
No. 1 Manila, 24x36	.75– .80
Kraft	.95–1.10
Wrapping—	
No. 1 kraft	6.00–6.50
No. 2 kraft	5.00–5.50
Southern kraft	4.75–5.50

Boards—	New York and Chicago
Solid news	40.00–45.00
Straw	50.00–55.00
Plain chip	32.50–35.00
White coated chip	50.00–55.00
Manila coated chip	45.00–50.00
Binder's board	65.00–70.00

Chemicals

(*Continued from page 1843*)

are slightly lower at 14.50 cents to a bit higher per pound for the domestic product, and 14.50 to 15.50 cents for imported casein.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	14.50 –15.50
Caustic soda, spot delivery	2.90 – 3.00
China clay, domestic washed	8.00 –13.00
China clay, foreign	15.00 –21.00
Rosin, Grade E	8.45 – 8.50
Satin white	2.00 – 2.25
Soda ash, 58 per cent light (bags)	1.32½–....
Starch, papermakers', in bags	3.82 –....
Talc (ton)	16.00 –18.00

Import Committee Reports Customs Rulings

Seventeen importations of French imitation handmade drawing paper brought to this country by a single importer have been revalued by the customs officials at a dutiable value nearly double that at which the importer entered the paper. Another question involving the dutiability of drawing paper has come to the attention of the Import Committee, this involving not only the valuation, but also the classification of the paper.

Higher Duty on Packet Stationery—The customs officials at Washington have decided upon the method of classifying packet stationery imported from France, in which the paper is perforated and gummed to serve both as letter paper and envelopes, by pasting the outer edge of the sheet. The authorities have decided that this paper is dutiable as writing paper at 3 cents per pound and 15 per cent, plus additional duty for special finish when decorated, instead of being dutiable as manufactures of paper at 35 per cent as claimed by the importers.

Duty on Bible Paper—After four years pendency in the United States Customs Court, a case involving the dutiability of Bible paper has been abandoned by a Philadelphia importer. The importer had claimed that the paper was dutiable as printing paper at ¼ cent per pound and 10 per cent, but the customs officials had classified it as Bible paper at 4 cents per pound and 15 per cent. The Import Committee in one of its earlier investigations found this foreign paper competing seriously, because of the low rate of duty then levied, with similar domestic papers, and evidence was provided the customs officials to justify a higher classification.

Classification of Printing Papers—Importers are also abandoning many of the cases in which the classification of printing papers was involved, particularly such shipments as were involved in the test cases decided in the spring in which papers not standard newsprint were held to be dutiable as printing paper. Two Finnish shipments of groundwood book paper are among those recently abandoned by the importers. Other cases in which the Import Committee has been interested and which have been abandoned by the importers include shipments of envelopes made of wrapping paper, and several shipments of boxed stationery held to be subject to additional duty for special finish.

Writing paper claimed by the importer to be dutiable as printing paper was held by New England customs officials to be dutiable as writing or as handmade paper.

Kalbfleisch Purchase Employee Group Insurance

Announcement is made by the Kalbfleisch Corporation that it has purchased group insurance for its personnel. This progressive step on the part of the company was inspired by a feeling of responsibility, and desire to promote the interests of its employees.

The group policy which the company has obtained is effective for every person who has been in the employ of The Kalbfleisch Corporation for six months or more. It is given to the employees without charge. The policy was issued by the Prudential Life Insurance Company.

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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BLEACHED AND UNBLEACHED

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Domestic Chemical and Mechanical Pulps and Paper

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CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp
Howard Smith Paper Mills, Montreal, Quebec.
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PULP

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551 FIFTH AVENUE, NEW YORK

PAPER

EXPORTS

Exports of paper from the United States in October recorded a fairly sharp gain in point of value over the preceding month, and were also greater than in the corresponding month in 1928, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. Exports in October reached a total value of $3,230,427, compared with $2,993,176 in September, and $2,707,888 in October last year. Exports during the first ten months of 1929, aggregating in value $31,355,545, registered a large increase over the exportations valued at $25,349,867 in the similar period of 1928.

Exports of newsprint in October amounted to 5,616,578 pounds, valued at $185,676, contrasted with 2,070,108 pounds of a value of $83,583 in the preceding month, and 2,656,571 pounds of a value of $99,898 in October, 1928. The largest exports of printing paper in October last were to South American countries, aggregating 3,386,076 pounds of the total exported, while 572,291 pounds were exported in the same month to the Philippine Islands, and 443,265 pounds to China.

Wrapping paper exports in October amounted to 3,827,746 pounds, valued at $258,799, against 3,324,973 pounds of a value of $221,986 in the similar month of 1928, while writing paper exports were 2,072,782 pounds of a declared value of $223,521, compared with 2,470,027 pounds of a value of $231,475 exported in October, 1928. Sheathing and building paper exports increased from a value of $45,789 in October, 1928, to $62,483 in the same month of 1929, and tissue paper exports were valued at $86,181 in October last, against $89,180 in the same month of 1928.

Exports of boxboard declined in October, 1929, to a value of $121,448, compared with $145,652 in the similar month of 1928, while exports of other paperboard and strawboard amounted in value to $194,881 last October, against $164,516 in the preceding October.

IMPORTS

Wood Pulp

It is nothing unusual for activity in the imported wood pulp market to narrow down toward the close of the year, and the situation has run rather true to form in recent weeks. Paper manufacturers have evinced less desire to buy pulp, and in many cases have been enabled to keep out of the market as purchasers because of having their major requirements supplied for a time. Moreover, with large last-open-water shipments from Scandinavia expected to reach American shores during the next several weeks, consumers in the United States have not been very eager to enter additional buying commitments as they presumably have felt that if unanticipated needs should develop they would be able to cover same through purchases of pulp on the spot in or afloat for this country as their requirements became known.

However, the market has not been in the doldrums, not by any means. Imports have continued to arrive in sizeable tonnage against contracts and back orders, and import houses and agents of foreign shippers have been kept engaged taking care of the pulp received. Also, there has been some buying on a fairly large scale in certain quarters, as for example, it is stated that some big orders for kraft pulp have been placed recently covering 1930 shipments from abroad. Then, too, there has been a moderate amount of trading in spot pulp, with some consumers finding it necessary to absorb such supplies, and in other cases some mills being busy disposing of surplus supplies which they found they would not need.

The price tone in imported pulp, of some grades at any rate, is not quite as firm as it was. It is no secret, in fact, that certain lines of foreign pulps are available at cheaper prices than prevailed recently. Bleached sulphite has eased off a bit quotably, and a certain amount of pressure has been noted to market this class of pulp. It is asserted that the market for imported bleached sulphite has been weakened by the increased supply coming into the market from new pulp mills in the northwestern part of the United States, and the eagerness of these mills to obtain a sales outlet for their product. Imported prime bleached sulphite is reported offered at 3.40 and 3.50 cents a pound ex dock New York, and it is possible that some transactions have been recorded at slightly under this price level, although the choice qualities are still quoted at 3.75 to 4 cents, and even higher. Strong unbleached sulphite of prime grade is around a price basis of 2.85 cents a pound ex dock at American Atlantic ports, and displays relatively a firm price tone, while prime easy bleaching sulphite is reported selling at 2.90 to 3.15 cents a pound ex dock, according to the grade. Standard Swedish kraft pulp is down to 2.35 and 2.40 cents a pound ex dock New York, and reports say that it is likely that sales of large tonnage have been made at a shade below this price basis.

Imports of chemical wood pulp into the United States in October last amounted to 130,248 long tons, valued at $7,478-171, showing an increase over the 120,119 tons of a declared value of $6,818,725 imported in the preceding month, according to official statistics issued by the U. S. Department of Commerce. The October receipts brought the total for the first ten months of 1929 up to 1,195,398 long tons, giving a monthly average of 119,539 tons, and recording a big gain over the total of 1,075,000 tons, or a monthly average of 107,500 tons, imported in the corresponding period of 1928. Groundwood imports in October were 24,125 long tons, against 18,452 tons in September, and for the first ten months of last year totaled 192,904 tons, contrasted with 180,715 tons in the similar time of 1928.

Current market quotations ex dock New York, and receipts at the port of New York during December, 1929, follow:

Bleached sulphite, No. 1	3.40– 4.25
Unbleached sulphite, strong No. 1	2.80– 3.00
Unbleached sulphite, No. 2	2.60– 2.85
Easy bleaching sulphite	2.90– 3.15
Mitscherlich unbleached, genuine	3.00– 3.25
Mitscherlich unbleached, ordinary	2.75– 3.00
Kraft, standard Swedish	2.35– 2.50
Groundwood, per ton (dry)	35.00–36.00

Price & Pierce, Ltd., 2,000 bls. from Gothenburg; Perkins-Goodwin Co., 6 bls. from Gothenburg; E. M. Sergeant Co., 1,646 bls. from Gothenburg, 299 Stockholm and 900 Oslo; Castle & Overton, 2,360 bls. from Rotterdam and 1,224 Hamburg; Guaranty Trust Co., 10 bls. from Stockholm and 127 Gothenburg; Parsons & Whittemore, 250 bls. from Stockholm and 127 Gothenburg; Stora Kopparberg Corp., 1,050 bls. from Skutskar; Pagel, Horton & Co., 8,750 bls. from Gefle and 2,400 Munksund; Bulkley, Dunton & Co., 2,250 bls. from Gefle and 1,800 Gothenburg; Scandinavian Pulp Agency, 1,250 bls. from Skutskar; Borregaard Co., 336 bls. from Oslo and 336 Tofte; Atterbury Bros., 6,887 bls. from Oslo and 125 Bremen; Chemical Bank & Trust Co., 600 bls. from Oslo and 254 Hamburg; Bank of Nova Scotia, 15,375 bls. from Hantsport, N. S.; M. Gottesman & Co., 2,000 bls. from Rotterdam and 800 Sebenico; A. P. W. Paper Co., 6,034 bls. from Sheet Harbor; J. Andersen & Co., 500 bls. from Drammen, 2,994 Greaker and 1,200 Oslo; O. E. Kiaer, 250 bls. from Greaker and 900 Gothenburg; National City Bank, 800 bls. from Oslo; Johaneson, Wales & Sparre, 1,753 bls. from Gothenburg and 890 Gothenburg; Lagerloef Trading Co., 2,090 bls. from Kotka; Equitable Trust Co., 300 bls. from Bremen; Order, 282 bls. from Hamburg and 765 Kotka.

Giving the Beaters a Lift

Conveyor or Gravity Feed Shredder

In the new mill of Taggart Bros. Co., Inc., Oswego, New York, one MITTS & MERRILL SHREDDER having a capacity of eight tons of dry stock per hour, shreds kraft pulp and discharges the stock by gravity into the chest where it is agitated until needed for the beaters.

The MITTS & MERRILL SHREDDER through it's economical method of preparing stock for the beater contributes much to the completion of the beater's work in the shortest possible time, thereby cutting down operating costs and speeding up the process of paper making.

MITTS & MERRILL SHREDDERS are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

It gives the beater an economical lift.

MITTS & MERRILL

1013 Tilden Street, Saginaw, Mich.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1929 Paper and Pulp Mill Catalogue

"Most Satisfactory"

FIRST—A careful single purchase. NEXT—closely checked results that proved a *real* saving on power and a great increase in production. AND NOW—in Robert Gair Co.'s Plants 37 beaters, all in all, have been reconstructed into Dayton *High-Speeds*. That's why they say, "Results pleasing and most satisfactory."

Daytons Can Do As Much For You!

The Dayton Beater & Hoist Co., Dayton, Ohio

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501 Fifth Ave.
New York City

Western Representative
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415 Lenora St.
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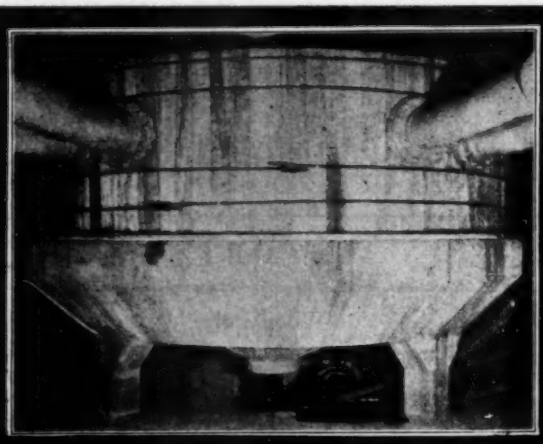
DAYTON
High Speed Beaters



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Wood Staves Fitted to Concrete Conical Bottom—A Paper Mill Installation.
All tanks are accurately made and only the best material and workmanship are used in their construction.
No tanks carried in stock—all tanks made to order for your special purpose.
Our shipping facilities are unexcelled and we are prepared to fill all orders quickly.
We maintain a Special Department for the purpose of co-operating with Engineers and Chemists in determining the most suitable material and constructon of tanks for their particular needs.

The Hauser-Stander Tank Co., *Cincinnati, Ohio*

Paper Stock

Imports of papermaking rags into the United States in October amounted to 42,341,319 pounds, valued at $986,095, according to official statistics compiled by the U. S. Department of Commerce, bringing the total imports during the first ten months of 1929 up to 369,779,107 pounds, of a declared value of $7,769,762, against 372,106,029 pounds of a value of $6,855,282 in the corresponding period of 1928. Imports of waste bagging and waste paper in the first ten months of 1929 were 122,907,183 pounds, compared with 127,613,190 pounds in the same time of 1928, while importations of old rope and other paper stock in the ten-month period totaled 104,326,861 pounds, against 51,220,428 pounds in the similar time of 1928.

Arrivals of papermaking materials during December were fairly heavy, judging from receipts through the port of New York. Imports of all kinds of paper stock excepting wood pulp at New York last month, these data being taken from manifests of steamers reaching that port during the month, were as follows:

Old Rope—William Steck & Co., 69 coils; Brown Bros. & Co., 1,075 coils and 139 bls.; International Purchasing Co., 101 bls. and 624 coils; United Fruit Co., 2 bls.; Equitable Trust Co., 125 bls.; E. Butterworth & Co., 118 pkgs.; J. C. Van Itallie & Co., 90 bls.; Liberty National Bank, 26 bls.; Furness, Withy & Co., 111 bls.; Order, 31 coils and 118 bls.

Old Bagging—Katzenstein & Keene, 51 bls.; Kerr Steamship Co., 36 bls.; Philadelphia National Bank, 106 bls.; International Germanic Trust Co., 300 bls.; Castle & Overton, 143 bls.; Darmstadt, Scott & Courtney, 44 bls.; Van Oppen & Co., 283 bls.; Ernst Mayer, 68 bls.; E. J. Keller Co., 134 bls.; Order, 176 bls.

Rags—Castle & Overton, 1,369 bls.; Ernst Mayer, 53 bls.; Darmstadt, Scott & Courtney, 540 bls.; American Overocean Corp., 85 bls.; Hoffman Lion Mills, 15 bls.; David Galloway, Inc., 90 bls.; J. Reiss & Co., 21 bls.; Fritz Stern, 274 bls.; Katzenstein & Keene, 311 bls.; J. Cohen & Sons, 180 bls.; Victor Galaup, Inc., 211 bls.; A. Friedman, 62 bls.; E. Butterworth & Co., 45 bls.; R. Canoval & Son, 220 bls.; William Steck & Co., 60 bls.; Robert Blank, 102 bls.; P. Garvan, Inc., 68 bls.; Jaffe Products Co., 18 bls.; S. Birkenstein & Sons, 224 bls.; Charles Belsky Co., 43 bls.; N. S. Maloof, 10 bls.; Armstrong Cork Co., 131 bls.; E. J. Keller Co., 432 bls.; National City Bank, 16 bls.; Bank of New York & Trust Co., 125 bls.; Chemical Bank & Trust Co., 725 bls.; Guaranty Trust Co., 123 bls.; Equitable Trust Co., 828 bls.; Bankers Trust Co., 55 bls.; Merchants National Bank of Boston, 71 bls.; New York Trust Co., 326 bls.; Chase National Bank, 234 bls.; Philadelphia National Bank, 102 bls.; Old Colony Trust Co., 18 bls.; Banca Commerciale Italiana Trust Co., 374 bls.; International Germanic Trust Co., 112 bls.; Manufacturers Trust Co., 283 bls.; Irving Trust Co., 179 bls.; Fidelity Trust Co., 145 bls.; Anglo-South American Trust Co., 37 bls.; Barrett Co., 77 bls.; Warren Manufacturing Co., 44 bls.; R. F. Downing & Co., 109 bls.; American Merchant Lines, 121 bls.; A. W. Fenton, Inc., 391 bls.; Advance Import Co., 7 bls.; C. R. Spence & Co., 172 bls.; Brown Bros. & Co., 31 bls.; Baring Bros. & Co., 43 bls.; International Mercantile Marine Co., 48 bls.; Gallagher & Ascher, 71 bls.; Kidder Peabody Acceptance Corp., 409 bls.; Order, 3,029 bls.

Miscellaneous Paper Stock—Lewis Jennings, Inc., 3 bls.; Castle & Overton, 95 bls.; R. M. Gray, Inc., 39 bls.; E. J. Keller Co., 120 bls.; Equitable Trust Co., 130 bls.; Guaranty Trust Co., 103 bls.; Irving Trust Co., 284 bls.; Chase National Bank, 120 bls.; Webster & Atlas National Bank, 77 bls.; Chemical Bank & Trust Co., 62 bls.; International Germanic Trust Co., 120 bls.; Brown Bros. & Co., 336 bls.; Milton Snedecker Corp., 79 bls.; Baring Bros. & Co., 78 bls.; R. F. Downing & Co., 19 bls.; T. D. Downing & Co., 35 bls.; Order, 304 bls.

Paper

Imports of paper into the United States in October, 1929, amounted in value to $14,929,520, according to official statistics compiled and issued by the U. S. Department of Commerce, registering an increase over the exportations valued at $13,352,579 in the preceding month, and also a gain over the imports valued at $14,370,483 in October, 1928. The October imports brought the total for the first ten months of last year up to $133,725,833, compared with imports valued at $127,777,150 in the corresponding period of 1928.

Paper imports in December were fairly large, taking the receipts at the port of New York as a criterion. While official statistics are not yet available, following are the arrivals through the port of New York last month, these data being taken from manifests of steamers reaching that port during December:

Printing—Stora Kopparberg Corp., 126 reels from Gothenburg and 156 reels Gefle; Fith Avenue Bank 25 bls. from Hamburg; E. Dietzgen & Co., 67 cs. from Rotterdam and 53 cs. Hamburg; T. N. Fairbanks, 24 cs. from Genoa; Keuffel & Esser Co., 114 rolls from Hamburg; P. C. Zuhlke, 30 cs. from Antwerp; Perkins-Goodwin Co., 78 reels from Bremen and 443 reels Hamburg; J. J. Bernitz & Co., 128 bls. from Hamburg; W. A. Foster, 35 cs. from Glasgow; Journal of Commerce, 151 reels from Kotka; H. Reeve Angel & Co., 289 reels from Kotka; J. Henschel & Co., 9 cs. from Hamburg; P. Puttmann, 16 cs. from Havre; Walker Goulard Plehn Co., 12 cs. from Hamburg; Order, 652 reels from Bremen and 8 bls., Liverpool.

Wrapping—Borregaard Co., 232 bls. and 132 reels from Gothen-

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Frequently we are asked "Is silicate retained in the sheet?" The ash test is the proof. An interesting comparison of container board liners was recently made for one of our friends. The kraft liner made with silicate° showed 7.7% increase in ash, while a jute liner made with silicate° showed 13% increase over liners of the same furnish, except that the silicate was omitted.

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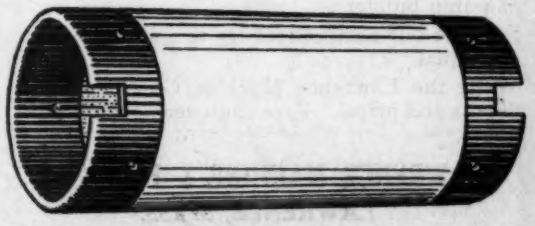

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Paper Mills use Starch for sizing to produce better and stronger sheets with lower cost of manufacture.

Our SPECIAL PAPER brand for beater-sizing increases strength of sheet and gives improved finish.

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Which absolutely control the drying of the sheet. Installed on sixty days' trial

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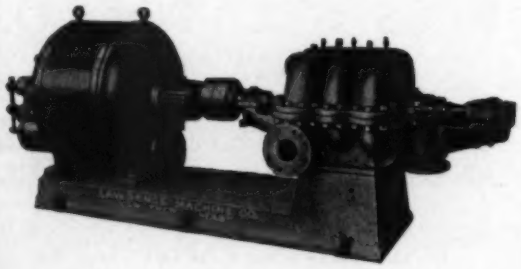

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burg; D. S. Walton & Co., 90 bls. and 153 rolls from Gothenburg; Atlantic Forwarding Co., 24 cs. from Hamburg; Crepe Kraft Co., 96 reels from Gothenburg; F. L. Kraemer & Co., 172 bls. from Gothenburg; Arkell Safety Bag Co., 113 reels from Gothenburg; Steiner Paper Corp., 23 cs. from Gothenburg; Mugler & Umlauf, 36 bls. from Gothenburg; American Express Co., 393 pkgs. from Hamburg; Fidelity Trust Co., 67 rolls from Hamburg; Standard Products Corp., 37 cs. from Antwerp and 61 cs. Southampton; A. Johnson, 373 reels from Gothenburg; Sylvania Industrial Corp., 36 cs. from Antwerp; F. C. Strype, 4 cs. from Antwerp; Consumers Paper Co., 5 bls. from Rotterdam; Robert Wilson Paper Corp., 27 cs. from Glasgow; Irving Trust Co., 5 bls. from Hamburg; Package Paper Co., 25 reels from Hamburg; Order, 23 bls. from Hamburg, 23 cs. Rotterdam and 42 cs. Southampton.

Cigarette—Standard Products Corp., 438 cs. from Havre, 156 cs. Southampton, and 5 cs. London; DeMauduit Paper Corp., 508 cs. Havre; Liggett & Myers Tobacco Co., 36 cs. from Bordeaux; American Tobacco Co., 800 cs. from Bordeaux; United Fruit Co., 11 cs. from Alicante; P. J. Schweitzer, Inc., 131 cs. from Marseilles; British-American Tobacco Co., 11 cs. from Southampton; Order, 135 cs. from Marseilles.

Writing—Guibont Freres & Co., 7 cs. from Havre and 19 cs. Southampton.

Filter—H. Reeve Angel & Co., 58 cs. from London and 25 cs. Southampton; A. Giese & Son, 8 cs. from Hamburg and 44 cs. Southampton; E. Fougera & Co., 50 cs. from Southampton; Corn Exchange Bank, 38 bls. from Bordeaux; G. Lueders & Co., 20 bls. from Bordeaux; C. Sleicher & Scholl Co., 12 cs. from Hamburg.

Tissue—Schenkers, Inc., 329 cs. from Hamburg; W. J. Byrnes & Co., 2 cs. from London, 8 cs. Southampton, 2 cs. Havre and 12 cs. Liverpool; F. C. Strype, 77 cs. from Helsingfors and 7 cs. Genoa; D. C. Andrews & Co., 12 cs. from Liverpool.

Drawing—Keuffel & Esser Co., 21 cs. from Rotterdam and 138 cs. and 22 rolls Hamburg; H. Reeve Angel & Co., 19 cs. from London.

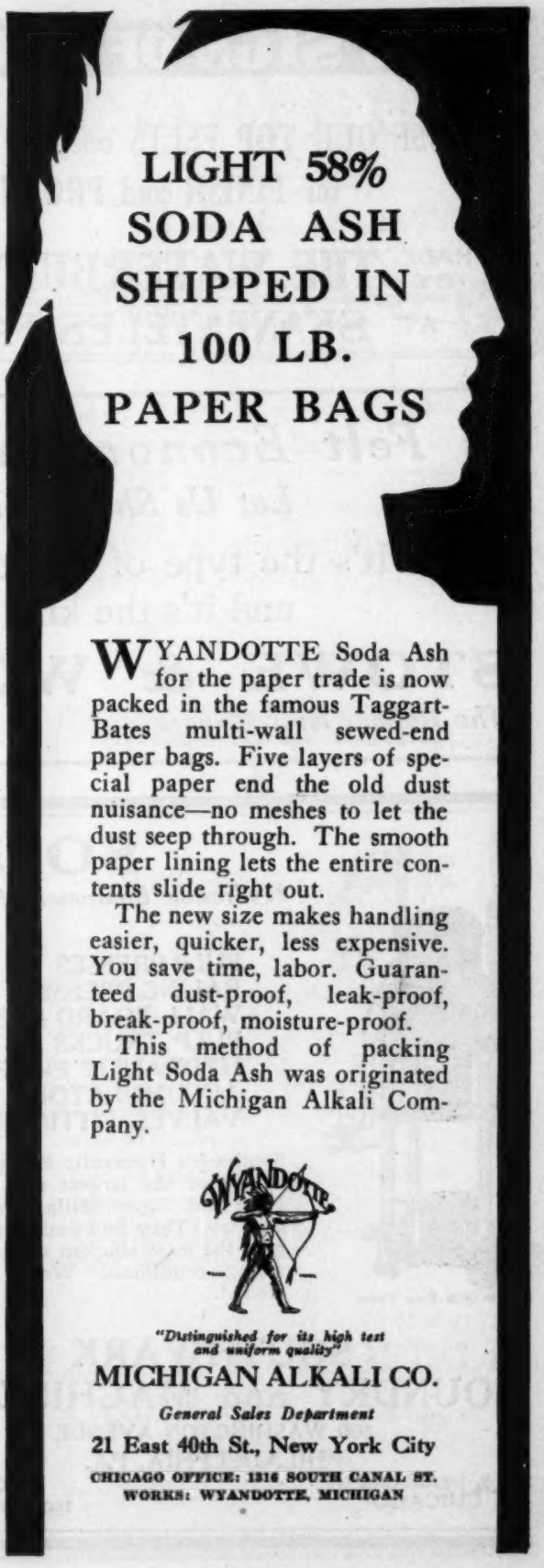
Hanging—A. C. Dodman, Jr., Inc., 22 bls. from Bremen, 52 bls. Southampton, 78 bls. Liverpool and 2 cs. Antwerp; C. A. Haynes & Co., 77 bls. from London and 26 bls. Liverpool; F. J. Emmerich & Co., 80 bls. from Havre, 269 bls. Hamburg, 90 bls. Liverpool, 6 bls. London and 2 bls. Southampton; G. J. Hunken & Co., 19 bls. from Bremen; R. F. Downing & Co., 5 cs. from Southampton and 4 bls. Hamburg; J. E. Bernard & Co., 110 pkgs. from Hamburg, 68 cs. Antwerp, 46 cs. Havre and 17 cs. Bremen; Draeger Shipping Co., 81 bls. from Hamburg; F. R. Trading Co., 348 bls from Bremen; Wedemann, Godknecht & Lally, 7 bls. from Bremen; Importers Freight Co., 5 bls. from Hamburg; F. A. Binder, 34 bls. from Bremen; C. Grimmer & Son, 4 bls. from Bremen; Irving Trust Co., 62 cs. from Hamburg; Kensington Wallpaper Co., 10 bls. from Havre and 13 bls. Hamburg; Order, 282 cs. from Hamburg, 2 bls. Antwerp and 16 cs. Southampton.

Photo—Globe Shipping Co., 423 cs. from Bremen and 329 cs. Antwerp; Gevaert Co. of America, 181 cs. from Antwerp; J. J. Gavin & Co., 5 cs. from Southampton; J. H. Schroeder Banking Corp., 12 cs. from Bremen; G. W. Sheldon & Co., 13 cs. from London; Order, 15 cs. from Hamburg.

Board—Walker Goulard Plehn Co., 332 rolls from Rotterdam; Robert Wilson Paper Corp., 194 rolls from Rotterdam; Chatham & Phenix National Bank, 43 bls. from Stockholm and 33 bls. Gothenburg; Lagerloef Trading Co., 53 bls. and 313 rolls from Kotka and 334 bls. Hamburg.

Miscellaneous—Hensel, Bruckman & Lorbacher, 9 cs. from Hamburg, 20 cs. Bremen and 20 cs. Havre; Import Sign Co., 8 cs. from Hamburg; S. Langstorf, 3 cs. from Hamburg; J. H. Schroeder Banking Corp., 2 cs. from Hamburg; F. C. Strype, 12 cs. from Yokohama and 42 cs. Genoa; Whitfield Paper Works, 22 cs. from Kobe; E. M. Sergeant Co., 10 cs. from Gothenburg; D. E. Bordner, 3 cs. from Hamburg; Central Hanover Bank & Trust Co., 132 cs. from Hamburg; Meadows, Wye & Co., 20 cs. from Rotterdam; Japan Paper Co., 39 cs. from Genoa, 41 cs. Havre, 19 cs. Southampton, 5 bls. Bordeaux, 4 cs. Rotterdam and 2 cs. London; S. Stern Stiner, 2 cs. from Bremen; S. Gilbert, 55 cs. from Bremen; Kadri Bros., 3 cs. from Havre; Pelican Works-Gunther Wagner, 17 cs. from Bremen; Keller-Dorian Paper Co., 118 cs. from Havre; Coenca-Morrison Co., 2 cs. from Havre and 7 cs. Southampton; M. Peter, 3 cs. from Havre; C. A. Redden, 2 cs. from Havre; Penson & Co., 91 pkgs. from Havre; Taub, Hammel & Schnall, 12 cs. from Bremen; B. F. Drakenfeld & Co., 53 pkgs. from Liverpool; F. L. Kraemer & Co., 14 cs. from Bremen, 3 cs. London and 3 cs. Southampton; Dyson Shipping Co., 5 cs. from London; International Forwarding Co., 10 cs. from Rotterdam, 14 cs. Antwerp, 7 cs. Hamburg and 10 cs. Bremen; Universal Carloading & Distributing Co., 41 cs. from Bremen and 4 cs. Hamburg; American Express Co., 75 cs. from Havre and 319 cs. Hamburg; Globe Shipping Co., 7 cs. from Roterdam and 87 bls. Hamburg; M. J. Corbett & Co., 3 cs. from Havre; Pennsylvania Railroad Co., 246 cs. from Hamburg; P. H. Petry & Co., 46 cs. from Havre; Whiting-Patterson Co., 11 cs. from Southampton; Borden & Riley Paper Co., 21 cs. from Antwerp and 52 cs. Rotterdam; D. C. Andrews & Co., 3 cs. from Bremen and 6 bls. Hamburg; J. Beckhardt & Co., 20 cs. from Bremen; Wessel, Duval & Co., 2 cs. from London; G. W. Sheldon & Co., 2 cs. from Southampton and 3 cs. from Liverpool; Thomas & Pierson, 6 cs. from Southampton; J. J. Shore & Co., 23 cs. from Bremen and 5 cs. Hamburg; North German Lloyd, 67 cs. from Bremen; Hurley Johnson Co., 22 cs. from Liverpool; H. Reeve Angel & Co., 2 cs. from London; Standard Products Corp., 11 cs. from Southampton; Heemsoth, Basse & Co., 60 bls. from Rotterdam; Causon & Montgolfer, 49 cs. from Havre; C. H. Powell & Co., 5 pkgs. from Havre; Fifth Avenue Bank, 23 cs. from Hamburg; Bendix Paper Co., 19 cs. from Hamburg; Quality Art Novelty Co., 6 bls. from Hamburg; Brown Bros. & Co., 5 cs. from Hamburg; Rohner, Gehrig & Co., 3 cs. from Havre; E. Dietzgen & Co., 131 cs. from Hamburg; Van Oppen & Co., 20 cs. from Genoa; Fuchs & Lang Mfg. Co., 75 cs. from Hong Kong; Eleto Co., 3 cs. from Havre; Kupfer Bros. Co., 10 cs. from Bremen; Dingelstedt & Co., 12 cs. from Bremen; W. Bersch, 15 cs. from Hamburg.

E. H. Pearson, New York District Manager of Electric Machinery Mfg. Co., Minneapolis, Minn., passed away December 7. Mr. Pearson had been in the employ of the Electric Machinery Co. since 1916.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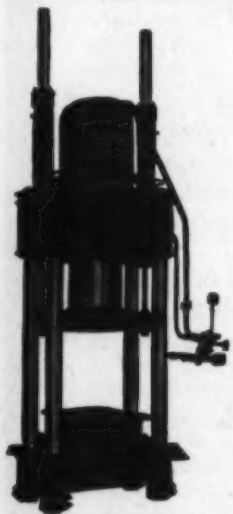
Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.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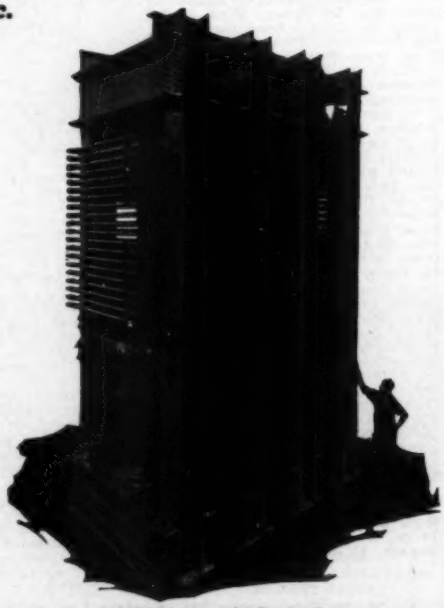
Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.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Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 42275—Paper flour bags. Bogota, Colombia. Purchase and agency desired.

No. 42279—Paper bags, napkins, and wrapping paper, plain and fancy. Bogota, Colombia. Agency desired.

No. 42245—Bank, bond and writing papers. Sydney, Australia. Agency desired.

No. 42241—Milk bottle caps, waxed. Ponta Delgada, Azores. Purchase desired.

No. 42276—Carton paper for photographers. Berlin, Germany. Purchase desired.

No. 42280—Kraft wrapping paper. San Juan, Porto Rico. Agency desired.

No. 42197—Sputum cups, pockets, of paper. Zurich, Switzerland. Purchase desired.

No. 42278—Vulcanized fiber, for imitation pig-skin bags and trunks. Helsingfors, Finland. Agency desired.

No. 42277—Vulcanized fiber, in sheets and rods; red, black and grey, for electrical purposes. Vienna, Austria. Agency desired.

No. 42272—Wall and insulating board. Johannesburg, South Africa. Agency desired.

No. 42196—Casein. Hamburg, Germany. Purchase and agency desired.

No. 42444—Cellulose, linter pulp and other raw materials for the manufacture of paper and rayon. Hamburg, Germany. Purchase and agency desired.

No. 42448—Jute pasteboard. Milan, Italy. Agency desired.

No. 42446—Kraft paper, black, lightweight. Foochow, China. Purchase desired.

No. 42447—Packing, printing, and writing paper, and paperboard. Brussels, Belgium. Purchase and agency desired.

No. 42398—Picnic plates, cups, etc. Zurich, Switzerland. Purchase and agency desired.

No. 42376—Wall paper. Buenos Aires, Argentina. Agency desired.

No. 42491—Wood pulp wadding tissue, absorbent. Rio de Janeiro, Brazil. Purchase desired.

No. 42565—Paper bags, for cement. Cairo, Egypt. Agency desired.

No. 42563—Paper bags, for holding fertilizer. Saigon, Indo-China. Agency desired.

No. 42584—Bond, foolscap, newsprint, blotting and cheap colored paper, envelopes and visiting cards. Medan, Sumatra. Purchase desired.

No. 42566—Fiber board for the manufacture of suitcases and trunks. Johannesburg, South Africa. Agency desired.

No. 42623—Paper milk bottles. The Hague, Netherlands. Purchase desired.

No. 42562—Pasteboard, impregnated, yellow. Vienna, Austria. Purchase desired.

No. 42680—Boxboard, patent and white coated. Mexico City, Mexico. Agency desired.

No. 42681—Cellulose and raw materials for paper mills. Milan, Italy. Agency desired.

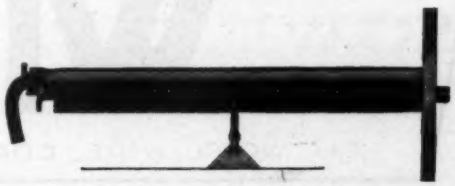
No. 42749—Wrapping paper, cheap. Santa Fe, Argentina. Purchase desired.

No. 42753—Hose, gasoline and oil, paper or fiber, for aircraft. Leipzig, Germany. Purchase desired.

At a meeting of the board of directors of The Permutit Company held December 30th, H. Kriegsheim, who has been president of the company for the past seven years, was appointed chairman of the board, and W. Spencer Robertson, formerly secretary of the American Locomotive Company, was appointed president of the company. Mr. Kriegsheim will continue to take an active interest in the management of the company.

SCOFIELD FELT CONDITIONER

The Scofield Felt Conditioner is a device designed to meet the needs of the paper industry. It is the result of years of concentrated study of the requirements. Its performance is guaranteed.



A dirty felt is a liability; a clean felt is an asset.

With the Scofield Conditioner you can keep your felts clean continuously. Dirty streaks and spots can be removed quickly and efficiently.

Many mills are using this method of felt conditioning. It is being used on machines making all grades of paper from tissues to boxboard.

Give us an opportunity to review your felt trouble.

We will gladly send you complete particulars upon request.

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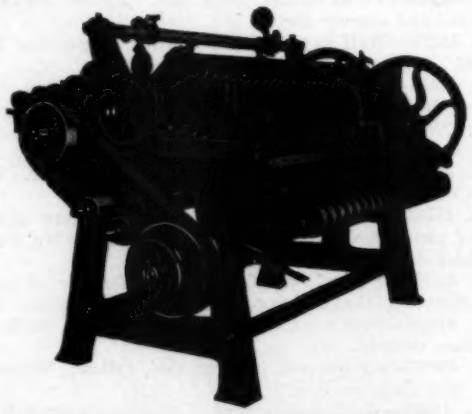

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New Catalogues, Books and Publications

Bristol Company, Waterbury, Conn.—A new catalogue No. 1009 describing this company's complete line of recording pressure and vacuum gauges, contains valuable information to any one using these instruments. This catalogue also contains a section in which are reproduced chart sections including the more frequently used ranges for use with the different models of Bristol gauges.

Buffalo Forge Company, Buffalo, N. Y.—This Company's new "Wetboy" a unit heater that washes and humidifies is described in a new folder which carries a full page color illustration of the heater.

Cochrane Corporation, Philadelphia, Pa.—A combined deaerator and hot water generator for supplying hot deaerated water to heating and hot water service systems is described in bulletin 686. The apparatus has been specially designed for installation in crowded basement boiler and engine rooms where there is limited headroom. Diagrams showing hot water piping systems adapted for various types of buildings are given in the pamphlet.

Combustion Engineering Corporation, New York City—Bulletin BVMI illustrates and describes the VM-Type Combustion Engineering boiler, which is designed especially for limited space conditions, where headroom is low. The folder contains a table of dimensions, as well as drawings which show the setting dimensions required for the various sizes in which this type boiler is built.

The Hill Clutch Machine & Foundry Co.—A new bearing catalogue 29-A has just been issued by this firm. In it are illustrated, described and listed the "Cleveland Type" flood lubricated oil film bearing, in all styles of rigid and ball and socket mountings, adjustable four ways. This type operates on the oil film principle. The shaft is floated on an unbroken oil film and free from metallic contact. Cleveland type oil film bearings are dseigned and built for line shaft application and for conditions of service which involve high speed, heavy pressures, continuous operation, high temperature conditions, etc. Copies on request.

Ingersoll-Rand Co., New York City—Bulletin No. 3060 just issued, announces a new line of air-cooled two-stage air compressors, known as the Type 30. V-type belt drive is employed. Both motor and compressor have ball bearing. The units are self-contained, the motor and compressor being mounted on a steel base, which is attached to the top of the air receiver. Illustrations and sectional drawings bring out the distinctive features of this compressor.

Merco-Nordstrom Valve Co., San Francisco, Calif.—A new catalogue features the Nordstrom valves in various sizes with pressures ranging from normal to 1,500 lbs. A large number of mechanical detail drawings are also shown, indicating the construction of the various types of valves. Interesting information is given on the various kinds of lubricants to be used at different temperatures and specific information regarding the type of lubricant to use for different contents within the pipe line. Various tables of interest to the engineer are also included. Copies upon request.

Metropolitan Life Insurance Company, New York City—The Policyholders Service Bureau of this company has made a survey of profit sharing plans in effect from the best practices of more than eighty companies in the United States, Canada and England, and incorporated this information into a report entitled "Sharing Profits with Employees." A limited number of copies of this survey are available to interested executives, and may be secured from the Policyholders Service Bureau.

National Safety Council, Chicago, Ill.—Many companies have found "The Safe Worker," a twenty-page pamphlet put out by the Safety Council, an effective aid in their safety campaigns. This booklet is an employees' magazine published monthly, bringing to the workers in their own language impressionable thoughts concerning safe practices and organization loyalty. Prices on any quantity given upon request.

Swenson Evaporator Company, Harvey, Ill.—Article VIII of the series on "Heat Transfer and Crystallization" by Prof. W. L. Badger of the University of Michigan has just been issued. This article covers the subject "Applications of the Forced Circulation Evaporator."

Richards-Wilcox Mfg. Co., Aurora Ill.—This Company, one of the largest manufacturers of conveying equipment, has issued a new catalogue of 192 pages containing complete description, layouts and diagrams of its complete line of OveR-Way conveying equipment. Track layouts, diagrams and specification tables are given applying to various types of installation. Copies of catalogue and information furnished upon request.

Robbins & Myers, Inc., Springfield, Ohio—Bulletin 5031, sets forth the detailed specifications and general design of the R&M Improved Electric Hoist. Illustrations and diagrams are given to show the simplicity of construction.

Schutte & Koerting Co., Philadelphia, Pa.—A new edition of this company's 4-R bulletin describes the S&K Obnoxious Vapor Condenser or Fume Absorber, which are designed for use in manufacturing plants where process operations generate gases that are odorous or destructive to near-by equipment and buildings. These condensers can also be used to precipitate dust coming over from grinders and other process machinery.

Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.—"Westinghouse Commercial Lighting" is the title of Catalogue 219-B, which has just been released by this company. Lighting equipment suitable for commercial interiors of any type is described and illustrated. Also included are the procedures for designing a lighting system and a list of some of the more prominent Westinghouse installations. Sizes and prices of all different types of fixtures are given, with information for ordering. Copies upon request.

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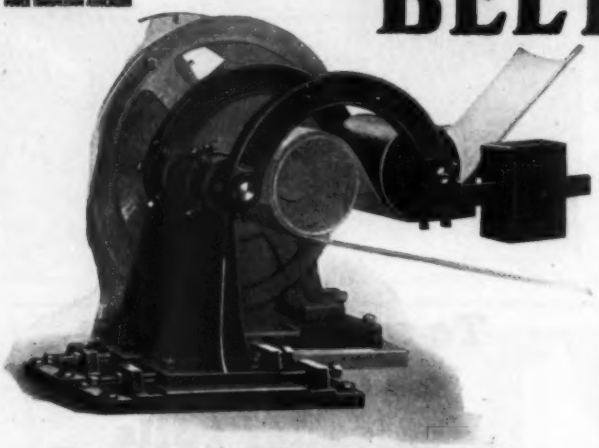

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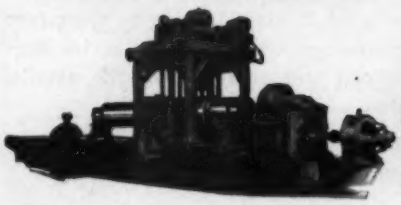

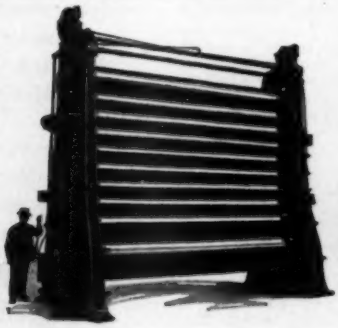

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